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AUTHORITY

AMC ltr dtd 22 Jul 1971

TECHNICAL REPORT NO. 3-726

MOBILITY ENVIRONMENTAL RESEARCH STUDY
A QUANTITATIVE METHOD FOR DESCRIBING TERRAIN FOR GROUND MOBILITY

Volume IV

VEGETATION

by

J. D. Broughton
E. E. Addor

March 1968

Sponsored by

Advanced Research Projects Agency
Directorate of Remote Area Conflict

Service Agency

U. S. Army Materiel Command

Conducted by

U. S. Army Engineer Waterways Experiment Station
CORPS OF ENGINEERS
Vicksburg, Mississippi

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ARMY-MRC VICKSBURG, MISS.

FOREWORD

The study reported herein was performed by the U. S. Army Engineer Waterways Experiment Station (WES) for the Office, Secretary of Defense (OSD), Advanced Research Projects Agency (ARPA). This report describes portions of two tasks of the overall Mobility Environmental Research Study (MERS) sponsored by OSD/ARPA for which the WES was the prime contractor and the U. S. Army Materiel Command (AMC) was the service agent. The broad mission of Project MERS is to determine the effects of the various features of the physical environment on the performance of cross-country ground-contact vehicles and to provide therefrom data that can be used to improve both the design and employment of such vehicles. A condition of the project is that the data be interpretable in terms of vehicle requirements for Southeast Asia. The funds employed for this study were allocated to WES through AMC under ARPA Order No. 400. The study was performed during the period June 1964-November 1965 under the general guidance and supervision of the MERS Branch of the WES, the staff element of WES responsible for the technical management and direction of the MERS program.

This volume is one of an eight-volume report entitled A Quantitative Method for Describing Terrain for Ground Mobility. These volumes are:

I: Summary
II: Surface Composition
III: Surface Geometry
IV: Vegetation
V: Hydrologic Geometry
VI: Selected Air-Photo Patterns of Terrain Features
VII: Development of Factor-Complex Maps for Ground Mobility
VIII: Terrain Factor-Family Maps of Selected Areas

Field data were collected between July 1964 and May 1965 by a three- or four-man team made up at various times of the following personnel: Messrs. A. P. Desmariais, C. Lebron-Rodriquez, and A. Vasquez, Area Evaluation Branch (AEB), Mobility and Environmental (M&E) Division, WES; Dr. P. L. Johnson and PVT L. A. Colyer, U. S. Army Cold Regions Research and Engineering Laboratory (CRREL); and Messrs. Chamnan Vichitlasksan, Sermsuak Sangpo, and Panom Chuersuwan, MERS Thailand Field Detachment. Field sampling was conducted under the direct supervision of a data collection leader. This position was occupied for periods of 3 to 4 months by Messrs. W. K. Dornbusch, Jr., and J. D. Broughton, Geology Branch, Soils Division, WES, and Mr. Ruangvitya Chotibitayathamin, MERS Thailand Detachment. Mr. R. E. Frost was the data collection leader for CRREL.

Data reduction and map preparation were accomplished by a team composed of Messrs. Broughton (team captain) and E. E. Addor (AEB). This volume of the report was written by Messrs. Broughton and Addor. The data reduction and map preparation were conducted under the direction of Mr. J. H. Shamburger, WES Geology Branch. Technical assistance in various phases of the work was provided by Mr. A. A. Rula, Chief, Mobility Environmental Research Studies Branch. All phases of this study were under the direct supervision of Mr. W. E. Grabau, Chief, AEB, and Dr. C. R. Kolb, Chief, Geology Branch, and the general supervision of Messrs. W. G. Shockley and S. J. Knight, Chief and Assistant Chief, respectively, of the M&E Division, and Messrs. W. J. Turnbull and A. A. Maxwell, Chief and Assistant Chief, respectively, of the Soils Division.

Directors of the WES during the conduct of this study and the preparation of this report were COL Alex G. Sutton, Jr., CE, and COL John R. Oswalt, Jr., CE. Technical Director was Mr. J. B. Tiffany.

CONTENTS

CONVERSION FACTORS, BRITISH TO METRIC UNITS OF MEASUREMENT

British units of measurement used in this report can be converted to metric units as follows:

Multiply	By	To Obtain
inches	2.54	centimeters
foot-pounds	0.138255	meter-kilograms

SUMMARY

Vegetation characteristics were measured according to established sampling procedures at 295 sites within six areas of Thailand. From these samples, stem diameter and spacing data were extracted for analysis, since these are the factors that significantly affect performance of ground-contact vehicles. A dual classification system was devised for mapping these factors in which spacing values of 0-1.5 m, >1.5-3.0 m, >3.0-9.0 m, and >9.0 m were determined for stem diameters of 5 cm or less, 13 cm or less, 23 cm or less, and 130 cm or less, and stem diameters of 3 cm or more, 8 cm or more, 15 cm or more, and 25 cm or more. Map units were identified and delimited on aerial photographs by established photo-interpretation keys and techniques. Twenty-five 1:50,000-scale map sheets were prepared for the six study areas, on which 72 distinct mapping classes were identified. The vegetation field data for the six study areas are summarized in Appendix A.

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MOBILITY ENVIRONMENTAL RESEARCH STUDY
A QUANTITATIVE METHOD FOR DESCRIBING TERRAIN FOR GROUND MOBILITY

VOLUME IV: VEGETATION

PART I: INTRODUCTION

Background

1. It has long been recognized that vegetation imposes significant effects on a variety of military activities. With a few exceptions, these effects are produced by the gross physical attributes of the vegetation as a whole, and not by taxonomic relations or subtleties of leaf shape or flower structure. Thus, for most military purposes, the description of vegetation must include only those physical attributes of plants and plant assemblages that are known or hypothesized to affect military activities.

2. At the inception of the data collection program in Thailand, very little reliable quantitative information on the effects of vegetation on vehicle performance was available, although it was certain that a relatively small number of factors was involved. It was known that a sufficiently large tree would stop any military vehicle; therefore, size was obviously a significant factor. Since large trees must be avoided, it was obvious that the maneuver requirements of a vehicle encountering a stand of large trees could range from a slight increase of path length to complete circumvention of the stand, depending on the density of the stand. Spacing of stems, therefore, was also a significant factor. Branching habit should also be considered since large branches emerging at or near the ground may require avoidance and could inflict damage on a vehicle. Relatively small, closely spaced plants become formidable obstacles when occurring in masses. For example, a dense stand of sugarcane may be impenetrable for some smaller vehicles. Although such factors as crown shape and size, and the size, shape, and density of leaves would appear to exert no direct effect on a vehicle, they appear to be of vital

importance for evaluating the effects of vegetation on visibility. All plants produce a screening effect, thus reducing the radius of vision of the driver, and in some cases forcing him to reduce speed.

3. In spite of this general knowledge of the effects of specific vegetation factors on ground mobility, no data were available that permitted the specification of a particular set of parameters as being of fundamental importance. As a result, it was decided to record data on all the vegetation parameters in accordance with established U. S. Army Engineer Waterways Experiment Station (WES) procedures, on the assumption that the detailed descriptions would probably incorporate all significant factors, even though the factors could not be identified as significant at the time they were recorded.

Purpose and Scope of Investigation

Purpose

4. The overall purpose of this study was to collect, tabulate, and analyze data on surface composition, surface geometry, vegetation, and hydrologic geometry in selected areas presumably representative of Thailand (fig. 1), with two definite objectives. The immediate objective was to assemble these data in such a form that they could be used to determine the effects of terrain on the cross-country mobility of ground-contact vehicles in environments characteristic of Southeast Asia. The long-term objective was to further the development of quantitative methods for describing those terrain factors that significantly affect vehicle mobility, in terms suitable for use as input to a mathematical or analytical vehicle performance prediction model.

5. The specific purposes of the study reported herein were to measure the principal vegetation factors known or presumed to affect vehicle performance in selected areas of Thailand, to develop methods for estimating factor values by the interpretation of aerial photographs (air photos), and to classify and map the significant factor values in the selected areas.

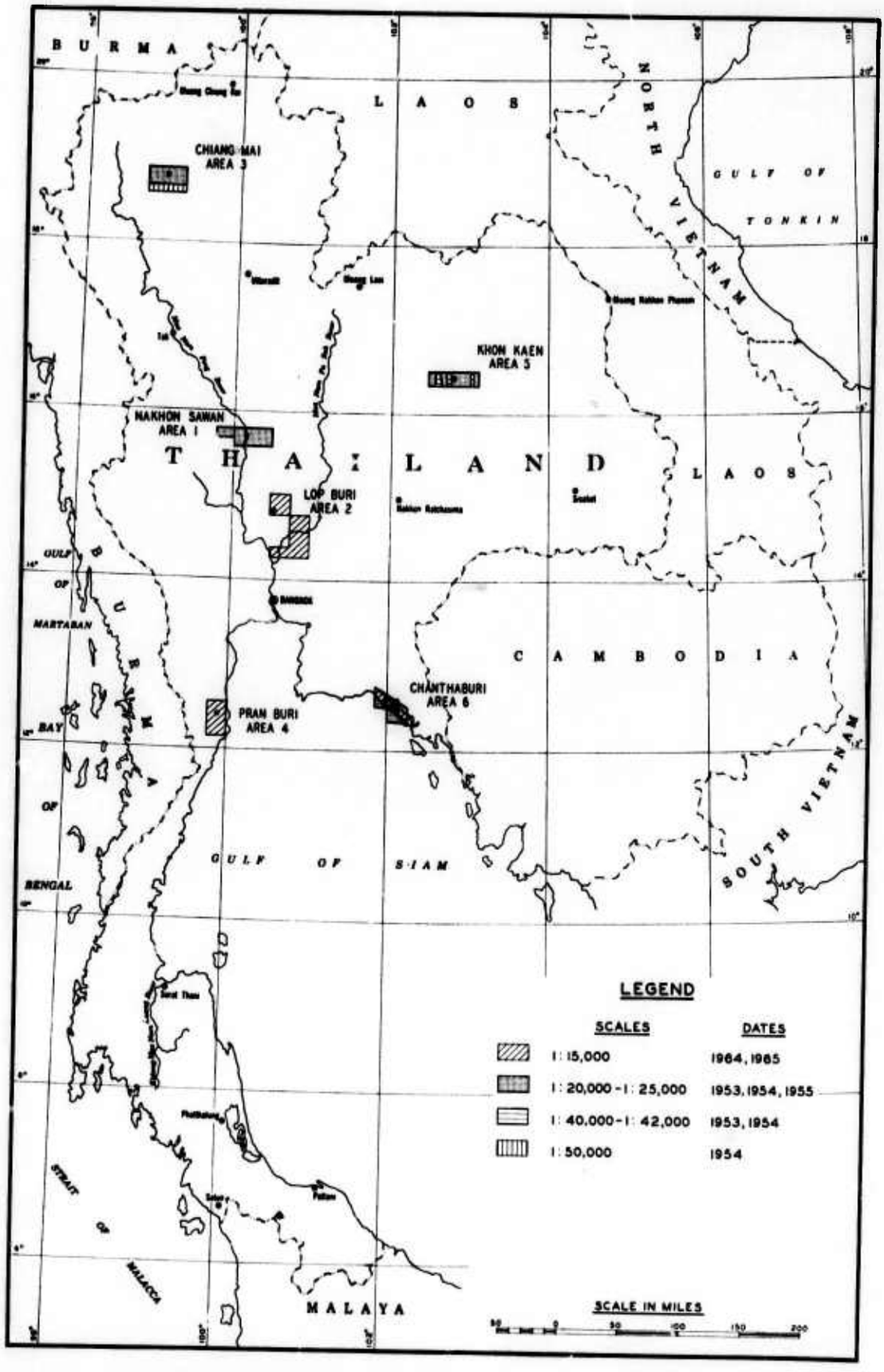

Fig. 1. Aerial photographic coverage of Thailand primary study areas

Scope

6. The results presented in this volume were derived primarily from analyses of 295 sites within the six primary study areas (Nakhon Sawan, Lop Buri, Chiang Mai, Pran Buri, Khon Kaen, and Chanthaburi) (fig. 1). The data were collected in the field in the period July 1964-May 1965. Interpretation of air photos constituted a major source of information for the factor maps, but scale and vintage of the air photos (see legend in fig. 1) affected the accuracy and reliability of interpretation.

PART II: DATA COLLECTION

Description System

7. The description system and sampling procedures used for this study are discussed in detail in Volume VI of the Environmental Data Collection Manual.[1] The system has been devised for describing any plant assemblage in terms of those features that are thought to be pertinent to most military considerations. Because all vegetation parameters may not be pertinent to all military activities, the description system has been designed so that the vegetation can be described in terms of any one or more structural features without consideration for the others.

8. Data collected in the field are recorded on forms that were designed to facilitate encoding the information onto computer cards for storage and machine handling. An example of a completed vegetation structure data form is illustrated in fig. 2. Fig. 3 presents a set of explanatory notes to accompany the data form and the computer card code to which the form is keyed. All vegetation structure data have been punched on computer cards, and computer analysis of the data is in the early stages of development. Until computer analysis is perfected, a portion of the analysis must be by visual and manual means.

Sample Site Selection Procedures

9. Vegetation sample sites were chosen from the viewpoint of characterizing as many as possible of the vegetation types within the selected areas. Such a characterization is necessarily vague since vegetation presents virtually infinite variations, and since types are but poorly defined for the present purpose. Within an area of interest, the structure of the vegetation may be a continuum of variation or it may be discrete associations. Sample sites were selected subjectively, based on generalizations appropriate to the circumstances. However, each site had to be homogeneous to some degree, and the scale of homogeneity[1,2] had to permit a sample of practicable size to be taken within the limits of time and man power. The density of sampling was varied within each study area according to size of the area, homogeneity of vegetation, and accessibility of sites.

VEGETATION STRUCTURE DATA

COUNTRY: THAILAND STATE: KHON KAEN CELL NO.: 5-V-12 DATE: 11-17-64 (MONTH DAY YEAR) MAP REFERENCE: AMS, L 708, 5560 II

CARD COLUMNS 1-6 — RECORD ALL MEASUREMENTS IN CENTIMETERS. CARD COLUMNS 8-6 — ALIGN NUMBERS TO RIGHT IN ASSIGNED COLUMNS. CARD COLUMNS 7-11 — MAKE AN ENTRY IN EVERY COLUMN. COLUMNS 12-17

GEOGRAPHIC COORDINATES: 16°28'52"N 102°48'15"E

							HEIGHT			CROWN			STEM							BRANCHING				ROOT HABIT				FOLIAGE				ARMATURE					DISTR.			SLASH				
											DIAMETER						DIAMETER						HEIGHT				HEIGHT		SPREAD													DIAMETER		
	CELL DIAMETER		PLANT NUMBER		DETERMINANT		MEASURED		CLASS	SHAPE	MEASURED		CLASS	DISTANCE FROM PLOT CENTER		AZIMUTH	NABIT	MEASURED		CLASS	HARDNESS	SUCCULENCE	MEASURED		CLASS	TYPE	TYPE	MEASURED		CLASS	MEASURED		CLASS	SIZE	SHAPE	TEXTURE	CONDITION	POISONS	SPINES > 5MM	SPINES < 5MM	CUTTING EDGES	STING ORGANS	1ST DECISION	2ND DECISION	3RD DECISION	LENGTH	A	B	SEQUENTIAL NUMBERS	REMARKS
18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
0	0	8	0	1	26	1	0	0	5	0	3	1	0	0	5	0	1	0	0	7	5	0	6	3	1	0	0	0	1	1	0	0	0	1	1	2	X	X	X	X	X	X	X	X	1	2	2	1	0	0	0	0	0	2	1	X	X	X	01	Bambo, 6 in clump
1	0	0	0	0	1	0	0	0	8	0	4	1	0	0	5	0	2	0	3	7	0	0	0	0	1	0	0	2	1	1	0	0	3	1	1	2	0	0	0	0	0	0	0	0	2	1	2	1	0	0	0	0	2	1	X	X	X	02	5 stems in clump
1	0	0	0	0	2	0	0	0	1	0	0	4	1	0	0	8	0	2	0	4	2	0	0	0	1	1	0	0	2	1	1	0	0	4	1	1	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	1	1	X	X	X	03	
1	0	0	0	0	3	0	0	0	1	4	0	4	1	0	0	4	0	1	0	4	1	0	0	0	7	1	0	0	2	1	1	0	0	4	1	1	2	0	0	0	0	0	0	0	0	2	1	2	1	0	0	0	0	1	1	X	X	X	04	
1	0	0	0	0	4	0	0	0	1	6	0	4	1	0	1	2	0	2	0	3	8	0	0	0	9	1	0	0	6	2	1	0	0	6	2	2	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	1	1	X	X	X	05	
1	0	0	0	0	5	1	0	0	8	0	4	1	0	1	4	0	2	0	4	7	0	0	1	8	1	0	0	1	1	1	0	0	3	1	1	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	2	1	X	X	X	06	24 stems in clump
1	0	0	0	0	6	0	0	0	1	3	0	4	1	0	1	1	0	2	0	3	0	0	0	2	6	1	0	0	2	1	1	0	0	3	1	1	2	0	0	0	0	0	0	0	0	2	1	2	1	0	0	0	0	1	1	X	X	X	07	
1	0	0	0	0	7	1	0	1	4	0	4	1	0	1	2	0	2	0	1	6	0	0	3	1	1	0	0	2	1	1	0	0	4	1	1	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	2	1	X	X	X	08	4 stems in clump
1	0	0	0	0	8	0	0	0	1	6	5	4	1	0	1	0	0	2	0	4	3	0	0	4	5	1	0	0	2	1	1	0	0	7	2	2	2	0	0	0	0	0	0	0	0	2	1	2	1	0	0	0	0	1	1	X	X	X	09	
1	0	0	0	0	9	1	0	1	4	0	4	1	0	0	8	0	2	0	2	4	0	0	4	9	1	0	0	2	1	1	0	0	1	1	1	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	2	1	X	X	X	10	3 stems in clump
1	0	0	0	1	0	1	0	1	0	0	4	1	0	1	2	0	2	0	4	3	0	0	5	2	1	0	0	2	1	1	0	0	5	2	2	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	2	1	X	X	X	11	2 stems in clump
1	0	0	0	1	1	0	0	1	2	5	4	1	0	0	6	0	2	0	2	4	0	0	5	7	1	0	0	4	2	1	0	0	8	2	2	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	1	1	X	X	X	12	
1	0	0	0	1	2	0	0	1	7	0	4	1	0	1	1	0	2	0	3	8	0	0	5	8	1	0	0	2	1	1	0	0	5	2	2	2	0	0	0	0	0	0	0	0	2	1	2	1	0	0	0	0	2	1	X	X	X	13	2 stems in clump
1	0	0	0	1	3	1	0	1	1	0	4	1	0	0	7	0	2	0	1	8	0	0	6	4	1	0	0	2	1	1	0	0	3	1	1	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	2	1	X	X	X	14	3 stems in clump
1	0	0	0	1	4	0	0	0	8	0	4	1	0	0	7	0	2	0	3	5	0	0	7	3	1	0	0	2	1	1	0	0	4	1	1	2	0	0	0	0	0	0	0	0	2	1	2	1	0	0	0	0	1	1	X	X	X	15	
1	0	0	0	1	5	1	0	0	9	0	4	1	0	0	8	0	2	0	4	0	0	0	8	0	1	0	0	2	1	1	0	0	1	1	1	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	2	1	X	X	X	16	4 stems in clump
1	0	0	0	1	6	1	0	1	4	0	4	1	0	1	0	0	2	0	5	0	0	0	8	3	1	0	0	1	1	1	0	0	3	1	1	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	2	1	X	X	X	17	6 stems in clump
1	0	0	0	1	7	1	0	0	9	0	4	1	0	1	4	0	2	0	3	8	0	0	9	0	1	0	0	1	1	1	0	0	1	1	1	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	2	1	X	X	X	18	25 stems in clump
1	0	0	0	1	8	0	0	0	9	0	4	1	0	0	5	0	2	0	3	6	0	1	0	4	1	0	0	2	1	1	0	0	6	2	2	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	1	1	X	X	X	19	
1	0	0	0	1	9	0	0	0	7	5	4	1	0	0	9	0	2	0	5	0	0	1	1	4	1	0	0	2	1	1	0	0	2	1	1	2	0	0	0	0	0	0	0	0	2	1	2	1	0	0	0	0	2	1	X	X	X	20	10 stems in clump
1	0	0	0	2	0	1	0	1	2	0	4	1	0	1	0	0	2	0	3	5	0	1	1	8	1	0	0	2	1	1	0	0	2	1	1	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	2	1	X	X	X	21	22 stems in clump
1	0	0	0	2	1	0	0	1	0	0	4	1	0	0	6	0	2	0	3	8	0	1	2	7	1	0	0	2	1	1	0	0	5	2	2	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	2	1	X	X	X	22	2 stems in clump
1	0	0	0	2	2	0	0	1	4	0	4	1	0	0	8	0	2	0	2	9	0	1	3	7	1	0	0	2	1	1	0	0	5	2	2	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	1	1	X	X	X	23	
1	0	0	0	2	3	1	0	1	6	0	4	1	0	1	3	0	2	0	3	9	0	1	4	3	1	0	0	2	1	1	0	0	2	1	1	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	2	1	X	X	X	24	18 stems in clump
1	0	0	0	2	4	1	0	0	8	0	4	1	0	0	7	0	2	0	4	8	0	1	5	3	1	0	0	1	1	1	0	0	1	1	1	2	0	0	0	0	0	0	0	0	3	1	2	1	0	0	0	0	2	1	X	X	X	25	9 stems in clump

WES FORM NO. 1374
FEBRUARY 1964

PAGE 1 OF 4 PAGES

Fig. 2. Example of completed vegetation structure data form (sheet 1 of 4)

VEGETATION STRUCTURE DATA

COUNTRY: THAILAND STATE: KHON KAEN CELL NO.: A-V-12 DATE: 11-17-66 MAP REFERENCE: AMS, L708, 3660II

GEOGRAPHIC COORDINATES: 16°08'52"N 102°42'15"E

CARD COLUMNS 1-4 RECORD ALL MEASUREMENTS IN CENTIMETERS. CARD COLUMNS 5-6 ALIGN NUMBERS TO RIGHT IN ASSIGNED COLUMNS. CARD COLUMNS 7-11 MAKE AN ENTRY IN EVERY COLUMN. MONTH DAY YEAR COLUMNS 12-17

			HEIGHT		CROWN			STEM						BRANCHING			ROOT HABIT				FOLIAGE				ARMATURE					DISTR.			SLASH				
						DIAMETER						DIAMETER			HEIGHT			HEIGHT		SPREAD															DIAMETER			
CELL DIAMETER	PLANT NUMBER	DETERMINANT	MEASURED	CLASS	SHAPE	MEASURED	CLASS	DISTANCE FROM PLOT CENTER	AZIMUTH	HABIT	MEASURED MEASURED	CLASS	HARDNESS	SUCCULENCE	MEASURED	CLASS	TYPE	TYPE	MEASURED	CLASS	MEASURED	CLASS	SIZE	SHAPE	TEXTURE	CONDITION	POISONS	SPINES > 5MM	SPINES < 5MM	CUTTING EDGES	STING ORGANS	1ST DECISION	2ND DECISION	3RD DECISION	LENGTH	A	B	SEQUENTIAL NUMBERS	REMARKS
18 19 20 21	22 23 24	25	26 27 28 29		30	31 32 33 34	35	36 37 38 39	40 41 42	43	44 45 46	47	48	49	50 51 52	53	54	55	56 57 58	59	60 61 62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79 80	
1.0.0.0	2.5	0	0.1.2.0	4	1	0.1.0.0	2	0.5.0.0	1.6.8	1	0.0.1	1	1	0	0.1.0	1	2	0	0.0.0	0	0.0.0.0	0	2	1	2	1	0	0	0	0	0	1	1					66	
1.0.0.0	2.6	1	0.0.9.0	4	1	0.0.6.0	2	0.4.0.0	1.7.6	1	0.0.2	1	1	0	0.2.2	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					67	4 stems in clump
1.0.0.0	2.7	1	0.1.4.0	4	1	0.1.6.0	2	0.3.5.0	1.8.4	1	0.0.2	1	1	0	0.3.5	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					68	24 stems in clump
1.0.0.0	2.8	1	0.1.0.0	4	1	0.1.0.0	2	0.1.8.0	1.9.6	1	0.0.2	1	1	0	0.2.2	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					69	4 stems in clump
1.0.0.0	2.9	0	0.1.0.0	4	1	0.0.5.0	2	0.3.2.0	1.9.4	1	0.0.2	1	1	0	0.1.0	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	1	1					70	
1.0.0.0	3.0	0	0.0.0.0	4	1	0.1.0.0	2	0.5.4.0	2.1.8	1	0.0.3	2	1	0	0.2.5	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	1	1					71	
1.0.0.0	3.1	1	0.1.8.0	4	1	0.1.1.0	2	0.4.8.0	2.2.2	1	0.0.2	1	1	0	0.1.0	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					72	6 stems in clump
1.0.0.0	3.2	1	0.0.8.0	4	1	0.0.7.0	2	0.2.4.0	2.2.7	1	0.0.1	1	1	0	0.1.2	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					73	10 stems in clump
1.0.0.0	3.3	1	0.1.1.0	4	1	0.1.2.0	2	0.2.5.0	2.1.8	1	0.0.1	1	1	0	0.0.1	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					74	24 stems in clump
1.0.0.0	3.4	0	0.0.9.0	4	1	0.1.0.0	2	0.2.8.0	2.1.4	1	0.0.2	1	1	0	0.1.0	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					75	8 stems in clump
1.0.0.0	3.5	1	0.0.9.0	4	1	0.0.9.0	2	0.2.2.0	2.1.0	1	0.0.2	1	1	0	0.1.2	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					76	7 stems in clump
1.0.0.0	3.6	1	0.1.7.0	4	1	0.1.4.0	2	0.5.0.0	2.0.7	1	0.0.2	1	1	0	0.2.0	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					77	30 stems in clump
1.0.0.0	3.7	1	0.1.6.0	4	1	0.1.5.0	2	0.4.2.0	2.2.8	1	0.0.2	1	1	0	0.2.5	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					78	40 stems in clump
1.0.0.0	3.8	1	0.1.2.0	4	1	0.1.0.0	2	0.4.0.0	2.1.8	1	0.0.2	1	1	0	0.3.0	1	2	0	0.0.0	C	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					79	8 stems in clump
1.0.0.0	3.9	1	0.1.4.0	4	1	0.1.1.0	2	0.5.0.0	2.2.6	1	0.0.2	1	1	0	0.2.6	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					80	80 stems in clump
1.0.0.0	4.0	1	0.1.0.0	4	1	0.0.9.0	2	0.2.2.0	2.1.9	1	0.0.2	1	1	0	0.1.8	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					81	6 stems in clump
1.0.0.0	4.1	1	0.1.1.0	4	1	0.1.0.0	2	0.4.6.0	2.1.8	1	0.0.2	1	1	0	0.1.8	1	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					82	
1.6.0.0	0.1	1	0.5.0.0	5	1	0.1.6.0	2	0.4.7.0	0.8.1	1	0.0.7	2	1	0	1.3.0	3	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	1	1					83	
1.6.0.0	0.2	1	0.4.6.0	5	1	0.1.6.0	2	0.7.5.0	0.8.6	1	0.0.7	2	1	0	1.2.0	3	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	1	1					84	
1.6.0.0	0.3	2	0.3.0.0	5	1	0.1.1.0	2	0.5.5.0	0.2.9	1	0.0.4	2	1	0	0.7.8	2	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	1	1					85	
1.6.0.0	0.4	1	0.5.0.0	5	1	0.1.8.0	2	0.7.8.0	0.3.8	1	0.0.6	2	1	0	1.0.5	3	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	1	1					86	
1.6.0.0	0.5	0	0.2.8.0	5	1	0.0.8.0	2	0.7.5.0	0.4.5	1	0.0.5	2	1	0	0.7.8	2	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	1	1					87	
1.6.0.0	0.6	0	0.3.0.0	5	1	0.1.4.0	2	0.7.0.0	0.5.7	1	0.0.4	2	1	0	0.5.0	2	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	2	1					88	2 stems in clump
1.6.0.0	0.7	1	0.2.9.0	5	1	0.1.2.0	2	0.4.5.0	0.7.9	1	0.0.3	2	1	0	1.1.5	3	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	1	1					89	
1.6.0.0	0.8	1	0.4.9.0	5	1	0.0.5.0	2	0.4.8.0	0.4.2	1	0.0.7	2	1	0	1.9.0	3	2	0	0.0.0	0	0.0.0.0	0	3	1	2	1	0	0	0	0	0	1	1					90	

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Fig. 2. (sheet 2 of 4)

VEGETATION STRUCTURE DATA

COUNTRY: THAILAND STATE: KHON KAEN CELL NO.: 6-V-12 DATE: 11-17-64 (MONTH DAY YEAR) MAP REFERENCE: AMS, L708, 6560 II

RECORD ALL MEASUREMENTS IN CENTIMETERS. (CARD COLUMNS 1-6) ALIGN NUMBERS TO RIGHT IN ASSIGNED COLUMNS. (CARD COLUMNS 9-6) MAKE AN ENTRY IN EVERY COLUMN. (CARD COLUMNS 7-11)

GEOGRAPHIC COORDINATES: 16°28'52"N 102°48'18"E

			HEIGHT		CROWN			STEM							BRANCHING			ROOT HABIT				FOLIAGE				ARMATURE					DISTR.			SLASH				
						DIAMETER						DIAMETER			HEIGHT			HEIGHT		SPREAD																		
CELL DIAMETER	PLANT NUMBER	DETERMINANT	MEASURED	CLASS	SHAPE	MEASURED	CLASS	DISTANCE FROM PLOT CENTER	AZIMUTH	HABIT	MEASURED MEASURED	CLASS	HARDNESS	SUCCULENCE	MEASURED	CLASS	TYPE	TYPE	MEASURED	CLASS	MEASURED	CLASS	SIZE	SHAPE	TEXTURE	CONDITION	POISONS	SPINES ≥ 5MM	SPINES < 5MM	CUTTING EDGES	STING ORGANS	1ST DECISION	2ND DECISION	3RD DECISION	LENGTH	DIAMETER A	DIAMETER B	SEQUENTIAL NUMBERS	REMARKS
18 19 20 21 22 23 24	25 26 27 28 29		30 31 32 33 34 35			36 37 38 39 40 41 42 43		44 45 46 47 48 49							50 51 52 53 54			55 56 57 58 59 60 61 62 63				64 65 66 67				68 69 70 71 72					73 74 75			76 77 78			79 80	
1.5.0.0.0.1	0.4.6.0.5		1.0.8.8.0.3			0.6.6.8.0.8.0.1		0.0.7.2.1.0							1.4.0.8.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					1.1						51	
1.6.0.0.1.0.0	0.1.9.0.5		1.0.1.0.0.2			0.6.9.0.0.9.0.1		0.0.0.2.1.0							0.5.0.2.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						52	2 stems in clump
1.6.0.0.1.1.1	0.4.5.0.5		1.0.1.1.0.2			0.7.9.0.0.9.0.1		0.0.0.6.2.1.0							1.0.7.8.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						53	
1.6.0.0.1.2.1	0.2.0.0.5		1.0.1.2.0.2			0.7.5.0.1.0.5.1		0.0.0.2.2.1.0							1.0.5.9.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						54	
1.6.0.0.1.3.0	0.2.0.0.5		1.0.1.8.0.2			0.7.5.0.1.2.0		0.0.0.3.2.1.0							0.8.5.2.2			0.0.0.0.0.0.0.0.0				2.1.2.1				0.0.0.0.0					2.1						55	
1.6.0.0.1.4.0	0.2.1.0.5		1.0.1.5.0.2			0.4.0.0.1.2.5.1		0.0.0.3.2.1.0							0.8.0.2.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						56	
1.6.0.0.1.5.0	0.2.0.0.5		1.0.1.1.0.2			0.8.1.0.1.3.5.1		0.0.0.3.2.1.0							0.1.0.1.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						57	
1.6.0.0.1.6.0	0.2.0.0.5		1.0.1.4.0.2			0.7.9.0.1.3.2.1		0.0.0.3.2.1.0							1.1.0.8.2			0.0.0.0.0.0.0.0.0				2.1.2.1				0.0.0.0.0					2.1						58	
1.6.0.0.1.7.0	0.1.8.0.5		1.0.0.0.0.2			0.7.5.0.1.4.7.1		0.0.0.3.2.1.0							0.8.5.2.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						59	
1.6.0.0.1.8.1	0.1.8.0.5		1.0.1.8.0.2			0.6.7.0.1.6.9.1		0.0.0.3.2.1.0							1.0.5.9.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						60	
1.6.0.0.1.9.0	0.2.6.0.5		1.0.1.0.0.2			0.7.9.0.1.7.1.1		0.0.0.0.2.1.0							0.9.5.2.2			0.0.0.0.0.0.0.0.0				2.1.2.1				0.0.0.0.0					2.1						61	
1.6.0.0.2.0.0	0.3.0.0.5		1.0.1.2.0.2			0.7.0.0.1.7.8.1		0.0.0.3.2.1.0							0.7.5.2.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						62	
1.6.0.0.2.1.1	0.3.5.0.5		1.0.1.6.0.2			0.6.6.0.1.7.8.1		0.0.0.4.2.1.0							1.0.0.8.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						63	
1.6.0.0.2.2.0	0.2.2.0.5		1.0.1.0.0.2			0.7.5.0.1.0.8.1		0.0.0.3.2.1.0							0.7.0.2.2			0.0.0.0.0.0.0.0.0				2.1.2.1				0.0.0.0.0					2.1						64	
1.6.0.0.2.3.1	0.2.8.0.5		1.0.1.6.0.2			0.8.7.0.1.9.0.1		0.0.0.3.2.1.0							1.1.2.8.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						65	
1.6.0.0.2.4.1	0.3.0.0.5		1.0.1.6.0.2			0.7.8.0.0.0.4.1		0.0.0.6.2.1.0							1.0.6.9.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						66	
1.6.0.0.2.5.0	0.6.0.0.5		1.0.2.5.0.3			0.7.0.0.2.6.8.1		0.0.0.9.3.1.0							0.9.0.2.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						67	
1.6.0.0.2.6.1	0.4.8.0.5		1.0.1.8.0.2			0.6.8.0.2.8.6.1		0.0.0.6.2.1.0							1.1.0.9.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						68	
1.6.0.0.2.7.1	0.3.8.0.5		1.0.1.0.0.2			0.7.2.0.2.8.4.1		0.0.0.4.2.1.0							1.6.0.3.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						69	
1.6.0.0.2.8.0	0.2.6.0.5		1.0.0.8.0.2			0.2.6.0.2.8.4.1		0.0.0.4.2.1.0							0.6.5.2.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						70	
1.6.0.0.2.9.0	0.2.8.0.5		1.0.1.8.0.2			0.3.9.0.2.9.6.1		0.0.0.3.2.1.0							0.6.5.2.2			0.0.0.0.0.0.0.0.0				2.1.2.1				0.0.0.0.0					2.1						71	Vine on stem
1.6.0.0.3.0.0	0.7.6.0.5		1.0.3.0.0.3			0.7.0.0.2.6.7.1		0.0.1.4.3.1.0							0.4.0.4.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						72	
1.6.0.0.3.1.0	0.5.0.0.5		1.0.1.2.0.2			0.7.2.0.2.6.1		0.0.0.8.2.1.0							0.2.0.4.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						73	
1.6.0.0.3.2.0	0.6.1.0.5		1.0.2.8.0.2			0.7.6.0.2.7.0		0.0.0.8.2.1.0							0.8.0.2.2			0.0.0.0.0.0.0.0.0				3.1.2.1				0.0.0.0.0					2.1						74	
1.6.0.0.3.3.0	0.6.2.0.5		1.0.1.8.0.2			0.8.1.0.2.7.0		0.0.0.3.2.1.0							1.3.0.5.2			0.0.0.0.0.0.0.0.0				2.1.2.1				0.0.0.0.0					2.1						75	

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Fig. 2. (sheet 3 of 4)

VEGETATION STRUCTURE DATA

COUNTRY: THAILAND STATE: KHON KAEN CELL NO.: 5-V-12 DATE: 11-17-66 (MONTH DAY YEAR) MAP REFERENCE: AMS, L708, 4560 II

GEOGRAPHIC COORDINATES: 16°28'52"N 102°48'13"E

CARD COLUMNS 1-4 — RECORD ALL MEASUREMERTS IN CERTIMETERS.
CARD COLUMNS 5-6 — ALIGN RUMBERS TO RIGHT IN ASSIGNED COLUMNS.
CARD COLUMNS 7-11 — MAKE AN ENTRY IN EVERY COLUMN
CARD COLUMNS 12-17

CELL DIAMETER	PLANT NUMBER	DETERMINANT	HEIGHT: MEASURED	HEIGHT: CLASS	CROWN DIAMETER: SHAPE	CROWN DIAMETER: MEASURED	CROWN DIAMETER: CLASS	STEM: DISTANCE FROM PLOT CENTER	STEM: AZIMUTH	STEM: HABIT	STEM DIAMETER: MEASURED MEASURED	STEM DIAMETER: CLASS	STEM: HARDNESS	STEM: SUCCULENCE	BRANCHING HEIGHT: MEASURED	BRANCHING HEIGHT: CLASS	BRANCHING: TYPE	ROOT HABIT: TYPE	ROOT HABIT HEIGHT: MEASURED	ROOT HABIT HEIGHT: CLASS	ROOT HABIT SPREAD: MEASURED	ROOT HABIT SPREAD: CLASS	FOLIAGE: SIZE	FOLIAGE: SHAPE	FOLIAGE: TEXTURE	FOLIAGE: CONDITION	ARMATURE: POISONS	ARMATURE: SPINES > 5MM	ARMATURE: SPINES < 5MM	ARMATURE: CUTTING EDGES	ARMATURE: STING ORGANS	DISTR.: 1ST DECISION	DISTR.: 2ND DECISION	DISTR.: 3RD DECISION	SLASH: LENGTH	SLASH: DIAMETER A	SLASH: DIAMETER B	SEQUENTIAL NUMBERING	REMARKS
18 19 20 21 22 23 24			25 26 27 28 29		30	31 32 33 34 35		36 37 38 39 40	41 42	43	44 45 46	47	48	49	50 51 52	53	54	55	56 57 58 59 60	61	62 63		64	65	66	67	68	69	70	71	72	73	74	75	76 77	78		79 80	
1 5 0 0 3 4	1		0 3 0 0 5		1	0 1 1 4 0	2	0 7 0 0 3	1 1	1	0 0 6	2	1	0	1 1 2	3	2	0	0 0 0 0 0	0	0 0	0	3	1	2	1	0	0	0	0	0	1	1						76	
1 5 0 0 3 6	1		0 3 5 0 5		1	0 1 1 0 0	2	0 7 5 0 3	1 2	1	0 0 4	2	1	0	1 0 5	3	2	0	0 0 0 0 0	0	0 0	0	3	1	2	1	0	0	0	0	0	1	1						77	
1 5 0 0 3 6	0		0 2 0 0 5		1	0 1 1 1 0	2	0 3 3 0 3	1 5	1	0 0 3	2	1	0	0 6 0	2	2	0	0 0 0 0 0	0	0 0	0	3	1	2	1	0	0	0	0	0	1	1						78	
1 5 0 0 3 7	0		0 4 1 0 5		1	0 1 1 2 0	2	0 1 2 0 3	2 2	1	0 0 5	2	1	0	1 6 5	2	2	0	0 0 0 0 0	0	0 0	0	2	1	2	1	0	0	0	0	0	1	1						79	
1 5 0 0 3 8	1		0 4 3 0 5		1	0 2 8 0 3		0 7 5 0 3	3 6	1	0 0 6	2	1	0	1 2 0	3	2	0	0 0 0 0 0	0	0 0	0	3	1	2	1	0	0	0	0	0	1	1						80	

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Fig. 2. (sheet 4 of 4)

DETERMINANT

0. No
1. Yes

HEIGHT CLASS[7,8*]

1. Less than 10 cm
2. 10-30 cm
3. 30-70 cm
4. 70-180 cm
5. 180-500 cm
6. 500-1300 cm
7. 1300-3500 cm
8. Over 3500 cm

CROWN[7,9b,10b*]

A. Shape
   X. NA. (Slash)
   0. Crownless
   1. Round
   2. Flat-topped
   3. Pointed
   4. Spindle
   5. Irregular
   6. Conforming

B. Diameter class
   X. NA. (Slash, Epiphyte)
   0. Crownless
   1. Less than 50 cm
   2. 50-200 cm
   3. 200-600 cm
   4. 600-1500 cm
   5. Over 1500 cm

STEM[3,7*]

A. Habit
   X. NA. (Slash
   1. Erect
   2. Decumbent
   3. Twining
   4. Free
   5. Epiphyte

B. Diameter Class[7*]
   X. NA. (Slash)
   0. None (Epiphyte)
   1. Less than 2.5 cm
   2. 2.5-7.5 cm
   3. 7.5-15 cm
   4. 15-30 cm
   5. 30-60 cm
   6. Over 60 cm

C. Hardness
   X. NA. (Epiphyte)
   1. Hard
   2. Soft

D. Succulence
   X. NA. (Epiphyte)
   0. Not succulent
   1. Succulent - green
   2. Succulent - not green (Fungi)

BRANCHING HABIT[7*]

A. Height[4,7*]
   X. NA. (Ht Cl I & II, Slash, Epiphyte)
   0. None (crownless)
   1. Less than 50 cm
   2. 50-100 cm
   3. 100-200 cm
   4. 200-300 cm
   5. Over 300 cm

B. Type[7*]
   X. NA. (case AX, A5)
   0. None (case A0)
   1. Horizontal
   2. Divergent

ROOT HABIT

A. Type
   X. NA. (Ht Cl I, II, & III; Epiphytes, slash)
   0. None[5*]
   1. Stilt or prop
   2. Enlarged base
   3. Plank buttress

B. Height
   X. NA. (case AX)
   0. None (case A0)
   1. 10-30 cm
   2. 30-60 cm
   3. 60-200 cm
   4. Over 200 cm

C. Spread
   X. NA. (case AX)
   0. None (case A0)
   1. 2-5 x stem
   2. 5-15 x stem D
   3. 15-45 x stem D
   4. Over 45 x stem D

FOLIAGE[6*]

A. Size
   0. None
   1. Less than 1 sq cm
   2. 1-150 sq cm
   3. Over 150 sq cm

B. Shape
   0. None (case A0)
   1. Broad and flat
   2. Long and flat
   3. Awl or needle
   4. Threadlike

C. Texture
   0. None (case A0)
   1. Filmy
   2. Membranous
   3. Hard
   4. Succulent

D. Condition
   0. None (case A0)
   1. Living
   2. Dead

ARMATURE

(Consider each TYPE separately, using the following code for each type)

0. None
1. Stems & branches
2. Foliage
3. Fruit
4. Stems, branches & foliage
5. Stems, branches & fruit
6. Foliage & fruit
7. Stems, branches, foliage & fruit

DISTRIBUTION[9b,10b*]

A. First Decision
   1. Stems solitary
   2. Clumped

B. Second Decision
   1. Random
   2. Patches
   3. Strips
   4. Grid

C. Third Decision
   X. NA. (When 2nd decision distr continues uninterrupted throughout the area)
   1-4. Same as for B1-4

SLASH

Approximate preponderant length of major pieces

X. NA. (i.e., not slash)
1. Less than or equal 2.5 m
2. Longer than 2.5 m

Preponderant stem diameters

A. Larger
   X. NA. (i.e., not slash)
   1-7. Same as stem diam classes 1-7

B. Smaller
   X-7. Same as for case A

NA. - Not applicable.
* See notes on sheet 2 for special interpretations.

Fig. 3. Computer card code for vegetation data and explanatory notes to accompany vegetation structure data form (sheet 1 of 2)

GENERAL

Align all numbers to extreme right of assigned columns (as though for addition): place "0" in unused columns in front of the number.

An entry must be made in every column. This is to prevent items from being overlooked in the field, or misinterpreted when being analyzed. Follow the card code carefully, as its design is intended to accommodate all possible situations. ("Class" columns may be completed in the office; all others should be completed in the field.)

Make entries neatly and legibly, placing numbers carefully in the columns; otherwise the data will need to be transcribed before being presented to the card-punch operator.

Record all measurements in whole centimeters. Where crude measurement is indicated (e.g. nearest whole meter), record as hundreds of centimeters or as tens of centimeters. Use of centimeters eliminates the need for decimals, and facilitates placement of digits in proper columns. Measurements made in the English system must be converted before being recorded on the data form.

SPECIFIC ITEMS

*1. Plant number refers to individual plants when these are analyzed individually (large plants), or to structural elements when plants are analyzed en masse (small plants and "massed" plants). For the latter, it is necessary to indicate in the "remarks" column the number of plants represented. A new sequence of numbers, each starting with "1", is used for each cell and subcell of a sample.

2. Distance from plot center: For subcells this is the distance from center of primary cell to center of subcell. For stems, measure from plot center to approximate center of stem.

3. Stem: Measurement of stem diameter to nearest whole centimeter implies that a stem less than 0.5 cm has a "measured" diameter of "0". When this is classified into diameter classes it is recorded as "class 1" (i.e. less than 2.5 cm).

4. Branching: for branching height over 3 meters, record as 300 cm, and this will be interpreted as "3 meters or more."

5. Root Habit: "None" when either/or (a) absent, (b) emerging from stem at less than 10 cm above the ground, (c) spread is less than twice the stem diameter.

6. Foliage characteristics of a plant that is leafless at the time of inspection shall be recorded as "0,0,0,0", even though it may be known that the plant bears leaves at some other time.

SPECIAL CONDITIONS

7. Clumped: For "clumped" plants (see definition under "distribution"), the following criteria shall apply:
   Height: consider the entire clump;
   Crown shape: consider the entire clump;
   Stem diameter: consider the average of the major stems;
   Branching: when applicable on basis of height class (above II) and stem hardness, record branching height as class 1 (less than 50 cm), and branching type as class 2 (divergent).

8. Epiphytes: For massed epiphytes, the "plant number" refers to the mass as a structural element. Consider specific measurements to be "not applicable", and record only the "classes" according to a crude approximation of the averages, where applicable according to the card code. Indicate in the "remarks" column the plant number of the supporting plant (i.e. record with which elements the epiphyte is associated).

9. Massed vines, creeping shrubs, and sod grasses, for which neither individual stems nor individual crowns can be discerned (e.g. honeysuckle, morning glory, ground juniper, bog willow, lawn grasses), either of two alternatives may be employed:

   (a) If in small discrete groups (clumps or patches), consider each mass as a separate "clumped" plant, and record its characteristics according to the card code for clumped plants (see note 7 above). (If groups are sufficiently abundant, yet discrete, construct a structural cell upon them.)

   (b) If forming a continuously intertangled mass over an extensive area, the structural cell is not strictly applicable. Consider it as a distinct type. Assign any arbitrary cell (or subcell) size (commensurate with the size of the plants being analyzed), let the crown diameter be equal to the cell diameter, and record other characteristics according to the card code for "clumps" except that record a distribution of 1,1, and whatever is applicable. If the mass has an associated structural element upon which a structural cell can be constructed, use that as the determinant, and record the massed element as a "clump" plant with crown diameter equal to the cell diameter, and other characteristics according to the card code but with a distribution of 1,1, and whatever is applicable.

10. Slash: This may be analyzed by the same system as are "massed" plants (note 9), using either alternative (a) or (b), depending upon whether the slash consists of (a) scattered pieces or discrete piles, or (b) a continuously entangled mass over an extensive area. Record the characteristics according to the card code for "slash."

Fig 3. (sheet 2 of 2)

10. The sites were selected primarily through stereoscopic examination of air photos and secondly through extensive ground reconnaissance. In general, the procedures were as follows:

a. The available air photos were examined stereoscopically, and every discrete pattern that owed its appearance to vegetation was identified.

b. At least one site was selected in each distinguishable pattern. Since site accessibility was known to be a problem,* sites were selected as close as possible to a road, motorable trail, or navigable waterway.

c. The vegetation sampling team then attempted to visit each selected site. In many instances, however, what had appeared on the photographs to be a usable road or trail proved to be utterly impassable. In such situations, new sites within the areas covered by the same air-photo patterns were chosen.

d. Concurrently with step c, the field party chief made as detailed a ground reconnaissance as possible, with the specific mission of finding examples of structural variations that had not been detected by the air-photo interpretation (subparagraph a). In each area in which such structural variations were noted, the party chief established at least one additional site.

Sampling Procedure

11. Sampling was done according to the "structural cell" concept.[1] A structural cell is defined as the minimum circular area that encompasses a statistically significant sample of the spatial distribution of the members of a given "population." This involves the selection of a particular attribute or combination of attributes prevalent in the plant assemblage, and letting this (these) attribute(s) define the population to be sampled. The attributes, or the plants exhibiting them, are designated "determinants," since they determine the size of the structural cell.** The structural cell may be considered to be a circle that encompasses 20 members of the defined population, or 20 determinants.[3]

12. A plant assemblage with different combinations of attributes

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* The only suitable transportation media were four-wheel-drive vehicles and, on rare occasions, small boats.

** Selection of determinants is discussed fully in reference 1.

may be thought of as consisting of several superimposed populations. For the present study, determinants were selected primarily on the basis of height classes. Although the height of plants appears to affect vehicle mobility only indirectly, height was normally used as the criterion for the selection of determinants because experience had demonstrated that the largest (i.e. the tallest) plants usually exhibit the largest mean spacing values. Thus, as a general rule, any sample based on the tallest plants would automatically result in an "oversample" of all smaller plants. Although there are known to be many exceptions to this general rule, it was believed that the advantages to be gained by giving all field parties a set of simple and reasonably objective criteria for establishing sample sizes far outweighed the possible benefits to be gained by attempting to use more subtle instructions. Even so, certain conditions or situations required special consideration. For example, special considerations for site 5-V-12 are briefly discussed below.

a. For height class 3 (30-70 cm) plants: An arbitrary cell 80 cm in diameter was chosen, containing 26 members.

b. For height class 4 (70-180 cm) plants: Since some of the plants in this height class were clumps (i.e., those having two or more stems), and since clumps were assumed to be of primary significance for cross-country mobility, the clumps were selected as determinants. Plants in the clumps tended to be remarkably homogeneous, with but five exceptions (sequential numbers 02, 13, 20, 22, and 35), which exhibited differences in leaf size. These five exceptions were arbitrarily omitted from the list of determinants. The result is a slight oversampling, since the 1000-cm circle includes 23 "plants" rather than the required 20.

c. For height class 5 (180-500 cm) plants: Since height class 6 plants (fig. 2) were so rare, they were included in the population from which the determinants were selected. Determinants were selected to exhibit height classes 5 or 6, and branching heights of class 3 or more; 21 plants meeting these criteria are included in a diameter of 1500 cm.

13. The sampling procedure used can be briefly described as follows. A cell center was selected at any point within an assumed homogeneous vegetation assemblage, and a plane table was set up over this center point. From the center point, the distance to the closest stem (plant) of a given

height class was measured. The position of the stem was plotted on the plane table sheet.* This stem was identified as plant number 1, and all data pertinent to it were recorded in the appropriate columns on the vegetation structure data form (see fig. 2). The next closest stem of that height class was plotted, measured, and recorded in the same manner, and this process was continued until all stems of the height class being sampled in the generated structural cell had been recorded and plotted. The exact cell diameter that encompassed 20 stems was measured on the plane table sheet. Using the same center, a new structural cell was generated for the next higher height class, and the procedures were continued until all height classes within the selected assemblage had been sampled.

14. The following forms were completed for each vegetation site sampled during the field investigation: (a) vegetation site location and description (fig. 4), (b) visibility data form (fig. 5), and (c) vegetation

VEGETATION SITE LOCATION AND DESCRIPTION

SITE NO.: 5-V-12 COUNTRY: THAILAND DATE SAMPLED: 11-17-64

ACCESS ROAD: HWY 21

REFERENCE MAP: AMS L708 5560 II

GRID COORDINATES: 665233

SLOPE: 4% SE TO NW ELEVATION: 210 METERS

GENERAL LOCATION: Proceed N from intersection of Hwys 21 & 16 for 2.55 mi., turn west through entrance of new NE University and go 2.25 mi. Site is 60 meters north of road.

Fig. 4. Completed vegetation site location and description form

* Plants less than 30 cm tall, and sometimes those less than 70 cm tall, were not plotted individually. They were instead described collectively (on one or a few lines of the data sheet), and the structural cell diameter was determined on the ground.

WES FORM NO. 1369
FEBRUARY 1964

VISIBILITY DATA FORM

MAP REFERENCE: AMS, L708, 5560 II SITE NO.: 5-V-12

GEOGRAPHIC COORDINATES: 16°28'52"N, 102°48'13"E

MEASURED BY: CHAMNAN, SERMSAK & CHARN DATE: 11-16-64

UNIT MEASURE: METER INSTRUMENT HEIGHT: 1.2 PHOTO NO.: 63929

AZIMUTH OF SIGHT LINE	TIME	WEATHER	SUN AZIMUTH	LIGHT INTENSITY	TARGET HEIGHT	DOT COUNT AT DISTANCE (⊡ SUN ON TARGET, ☒ SUN NOT ON TARGET) 5	10	15	20	25	30	NOTES
0°	1419	Clear	229		1.9	25 ⊡	25 ⊡	25 ☒	8 ☒	14 ⊡	3 ⊡	
					1.2	25 ⊡	25 ⊡	24 ☒	11 ⊡	9 ⊡	0 ⊡	
					0.5	12 ⊡	9 ⊡	0 ⊡	0 ⊡	Ex ⊡	Ex ⊡	
45°	1426	Clear	230		1.9	25 ⊡	1 ⊡	1 ⊡	0 ⊡	Ex ⊡	Ex ⊡	
					1.2	14 ⊡	4 ⊡	Ex ⊡	Ex ⊡	Ex ⊡	Ex ⊡	
					0.5	21 ⊡	Ex ⊡	Ex ⊡	Ex ⊡	Ex ⊡	Ex ⊡	
90°	1430	Clear	231		1.9	25 ⊡	17 ⊡	10 ⊡	1 ☒	Ex ⊡	Ex ⊡	
					1.2	25 ⊡	11 ⊡	11 ⊡	7 ☒	2 ☒	Ex ☒	
					0.5	25 ⊡	6 ⊡	16 ⊡	Ex ☒	Ex ⊡	Ex ☒	
135°	1436	Clear	232		1.9	19 ⊡	4 ⊡	20 ⊡	25 ⊡	22 ⊡	16 ⊡	
					1.2	9 ⊡	15 ⊡	17 ⊡	9 ⊡	7 ⊡	13 ⊡	
					0.5	7 ⊡	Ex ⊡	Ex ⊡	Ex ⊡	Ex ⊡	Ex ⊡	
180°	1442	Clear	233		1.9	25 ☒	2 ☒	4 ☒	Ex ☒	Ex ☒	Ex ⊡	
					1.2	25 ☒	8 ☒	7 ☒	Ex ☒	Ex ☒	Ex ☒	
					0.5	8 ☒	Ex ☒	Ex ☒	Ex ☒	Ex ☒	Ex ☒	
225°	1448	Clear	234		1.9	25 ☒	25 ☒	21 ☒	17 ☒	20 ☒	Ex ☒	
					1.2	25 ☒	25 ☒	23 ☒	23 ☒	4 ☒	Ex ☒	
					0.5	18 ☒	19 ☒	6 ☒	Ex ☒	Ex ☒	Ex ☒	
270°	1452	Clear	235		1.9	25 ☒	22 ☒	17 ☒	6 ☒	Ex ☒	Ex ☒	
					1.2	25 ☒	23 ☒	9 ☒	4 ☒	Ex ☒	Ex ☒	
					0.5	25 ☒	12 ☒	5 ☒	Ex ☒	Ex ☒	Ex ⊡	
315°	1458	Clear	236		1.9	25 ⊡	24 ☒	13 ☒	4 ☒	3 ☒	0 ☒	
					1.2	12 ⊡	19 ☒	7 ☒	Ex ☒	Ex ☒	Ex ☒	
					0.5	9 ⊡	9 ☒	13 ☒	Ex ☒	Ex ☒	Ex ☒	

NOTES: No instrument available for measuring the light intensity.

Fig. 5. Completed visibility data form

structure data form (fig. 2). The data recorded on each of these forms were taken at Khon Kaen Site 5-V-12. Ground stereoscopic photographs were made at each site (see photograph 2 for an example). Selected ground photographs and written descriptions of the vegetation within the unsampled portions of the study area supplemented the site data.

PART III: DATA REDUCTION AND ANALYSIS

15. Vegetation data for Thailand were available primarily from three sources: (a) existing publications, (b) the preliminary survey of Thailand conducted in 1962,[4] and (c) the field data collected under the Mobility Environmental Research Studies (MERS) program between July 1964 and May 1965. The survey of existing literature on Thailand[5] failed to contribute significantly to the classification and mapping of vegetation within the Thailand study areas, because the publications on vegetation did not contain the quantitative values for stem spacing and stem diameter necessary for describing those vegetation characteristics significant to cross-country mobility. The data collected during the preliminary survey in 1962 and that collected by the U. S. Army Cold Regions Research and Engineering Laboratory (CRREL) in 1964[6] were obtained by means of a modified sampling technique that did not include the detailed measurements required in the present mapping program. However, these data furnished guidance for determining the general characteristics in some of the areas not sampled during this study.

16. Vegetation data collected at the 295 sites within the Thailand study areas (see fig. 1) were reduced and analyzed. The data for the six study areas are summarized in Appendix A. Complete data obtained at each site are available at the WES.

Data Reduction Rationale

17. Vehicle tests conducted in a variety of vegetation assemblages have revealed that the attributes of vegetation that most significantly affect vehicle performance are the size and spacing of stems and the total screening effects. Meaningful relations were established between size and spacing of stems and vehicle characteristics that permitted these stem size and spacing relations to be classified for mapping. Relations between screening effects and/or branching height and vehicle characteristics and performance could not be established within the time alloted to the MERS program; therefore, classification of these vegetation attributes has not been attempted for this study.

18. Relative to vehicle performance, vegetation can be thought of as a collection of objects distributed in such a way that they must be either overridden or avoided. Whether to override or avoid depends on certain characteristics of the vehicle and is the driver's option. A single plant standing in the path of a vehicle is most efficiently overridden if it is very small, and most efficiently avoided if it is very large. But "very small" and "very large" are necessarily relative to a vehicle's tractive effort, e.g. to a child's go-cart, a stem a few centimeters in diameter might be very large, whereas to a heavy tank, a stem 30 cm in diameter might be very small.

19. Vegetation assemblages, however, do not normally consist of a solitary stem to be overriden or avoided. Normally, an assemblage consists of numerous stems of various spacings. If these stems are of such diameters that overriding is impossible, avoidance is required. The difficulty of avoidance is dependent upon the spacing, increasing with decreasing spacing until at some small spacing value, avoidance is impossible, and the vehicle is immobilized. The effect of spacing on vehicle performance can be measured by the speed at which avoidance can be accomplished (fig. 6), and this is a function of the width, length, steering ratio,

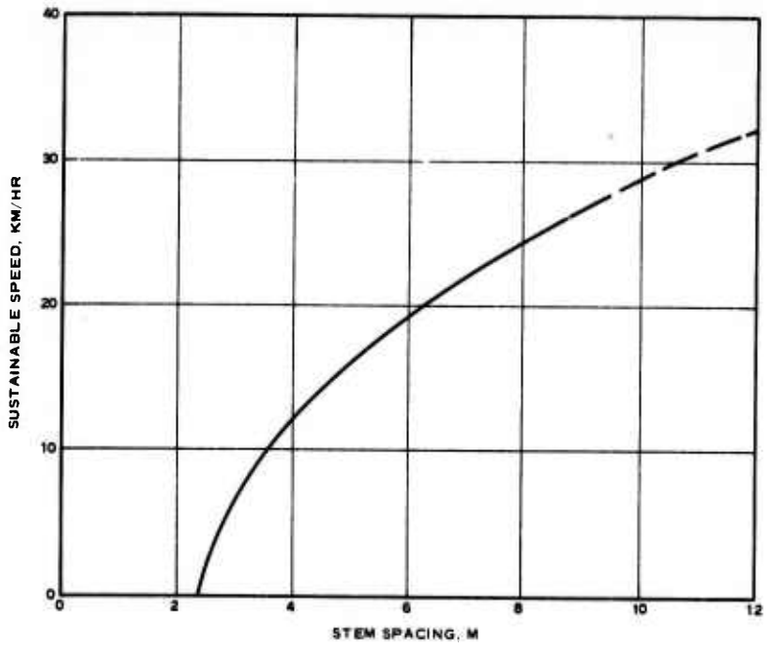

Fig. 6. Speed versus stem spacing relation for M37 truck

stability, and other maneuvering characteristics of the vehicle. It also includes a component involving the driver's ability, but this can apparently be reduced to a minor and relatively constant value by training and experience.

20. Most vegetation assemblages consist of a collection of stems with such size variations that some may be efficiently overridden while others must be avoided, and with such spacing variations that some may be efficiently avoided while others must be overridden. Thus, maximum sustained speed can result only from the most judicious path selection, i.e. overriding when to do so is faster than avoidance, and vice versa. It is in the process of path selection that screening effects assume their most significant role.

21. A vegetation factor map pertinent to ground mobility must indicate or offer an interpretation for the speed and operational efficiency of any given vehicle traversing an area.* Therefore, the map should indicate significant stem diameter and spacing values in such a way that the optimum trade off between override and avoidance can be interpreted for the selected vehicle. This implies that data required to evaluate both override requirements and maneuver requirements should be indicated; i.e., it is not sufficient for either stem diameters per se or stem spacings per se to be indicated, but it is necessary that the relations between spacing values and stem diameters be indicated.

22. But this relation alone still is not quite sufficient. It is obvious that if a vehicle cannot override a stem of given diameter, neither can it override a stem of any greater diameter; thus, the spacing of stems that must be avoided is measured not by the spacing of stems of that given diameter alone, but of that diameter and greater. The effective spacing value or the useful distance between stems is thus decreased, and the maneuver requirement increased accordingly. Similarly, if the selected vehicle can override stems of a given diameter, it can also override stems

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* There is an essential difference between a "mobility" map and a "factor" map: the former usually indicates directly the ability of a <u>given</u> vehicle to travel, whereas the latter indicates the factors affecting mobility in such a way that the mobility of <u>any selected</u> vehicle may be interpreted.

of any smaller diameter. However, the presence of stems of smaller diameters increases the frequency of overridable stems, a condition that increases override requirements and results in a decrease in speed. Therefore, the spacing of stems to be overridden is measured not by the spacing of stems of a given diameter alone, but of that diameter and smaller.

23. These considerations led to the term "cumulative" diameters, which means that spacing values used as data for override calculations are based upon a given stem diameter and all stems smaller than that diameter.* Likewise, the spacing values used as data for maneuver calculations are based upon a given stem diameter and all stems greater than that diameter.

24. Actual tests with the M37, M35A1, M29C, and M113 military vehicles established that a stem diameter of less than 2 cm had a reasonably insignificant effect on any of the test vehicles. Maximum overridable stem diameter for the M37 and M29C vehicles was determined to be in the neighborhood of 7 cm; for the M35A1 vehicle the maximum overridable stem diameter was determined to be approximately 15 cm, and for the M113 vehicle the maximum overridable stem diameter was approximately 25 cm. These, consequently, were adopted as limiting diameters; that is, the presence of stems of these sizes or greater imposes a maneuver requirement upon the various classes of vehicles. Then, because these diameters are based upon the maximum capabilities of the test vehicles and are presumed not to be overridable, the limiting diameters for override capability were taken to be slightly less than the values listed above; that is, equal to or less than 5, 13, 23, and 130 cm. The upper limit of 130 cm was selected arbitrarily. Stem diameters this large are infrequent in Thailand, at least within the study areas. Use of this limit, however, served the purpose of including the spacing of all stems. Therefore, for portraying the stems in the study areas the following diameter ranges were adopted:

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* There is a modest fallacy in this assumption. The energy requirement (or work done) for overriding the smaller stems is not necessarily equal to the energy requirement for overriding the larger stems, depending upon relative spacing values; therefore, the work increase is not directly proportional to stem diameter as is implied here. (This is not true for maneuver requirements.) This was partly compensated for, however, by a proper interpretation of spacing values for various diameter classes.

equal to or greater than:	equal to or less than:
2 cm, 7 cm, 15 cm, and 25 cm	5 cm, 13 cm, 23 cm, and 130 cm

25. For small vehicles such as the M37 and M29C, movement is denied when obstacles necessitating maneuvering have spacing values of approximately 1.5 m; for vehicles approximately the size of the M35A1, movement is denied when obstables necessitating maneuvering have spacing values of approximately 3 m, and at this spacing (3 m) movement is also difficult for the smaller vehicles. For all classes of vehicles, movement is significantly affected by spacing values up to approximately 9 m. At spacing values greater than 9 m, movement is not significantly affected for any of the test vehicles. Therefore, these values (<1.5 m and >9 m) were adopted as the limiting spacing values.

26. For purposes of labeling the map units, each of the four spacing ranges selected for mapping was given a number as follows:

Spacing Class Limits, m	Class Number
>9	1
>3 to 9	2
>1.5 to 3	3
0 to 1.5	4

These class numbers were used to identify the spacing class limits associated with each of the "less than" and the "greater than" diameter ranges (see paragraph 24). Outlined areas on the preliminary maps were labeled with a fraction consisting of four digits in the numerator and four digits in the denominator, e.g. $\frac{3444}{4211}$. The digits (class numbers) in the numerator specified a spacing class for $\leq$5 cm, $\leq$13 cm, $\leq$23 cm, and $\leq$130 cm always in that order. The digits in the denominator indicated the spacing class number of stems with diameters $\geq$2 cm, $\geq$7 cm, $\geq$15 cm, and $\geq$25 cm always in that order. The derivation of this system is explained in detail in fig. 7.

27. In the mathematical cross-country, speed-prediction model the analysis of the work of override requires that data on stem spacing be input as the number of plants of given stem diameters per unit area. Since the map unit designators were designed to make it possible to extract such information, albeit in a generalized form, the factor maps were adequate

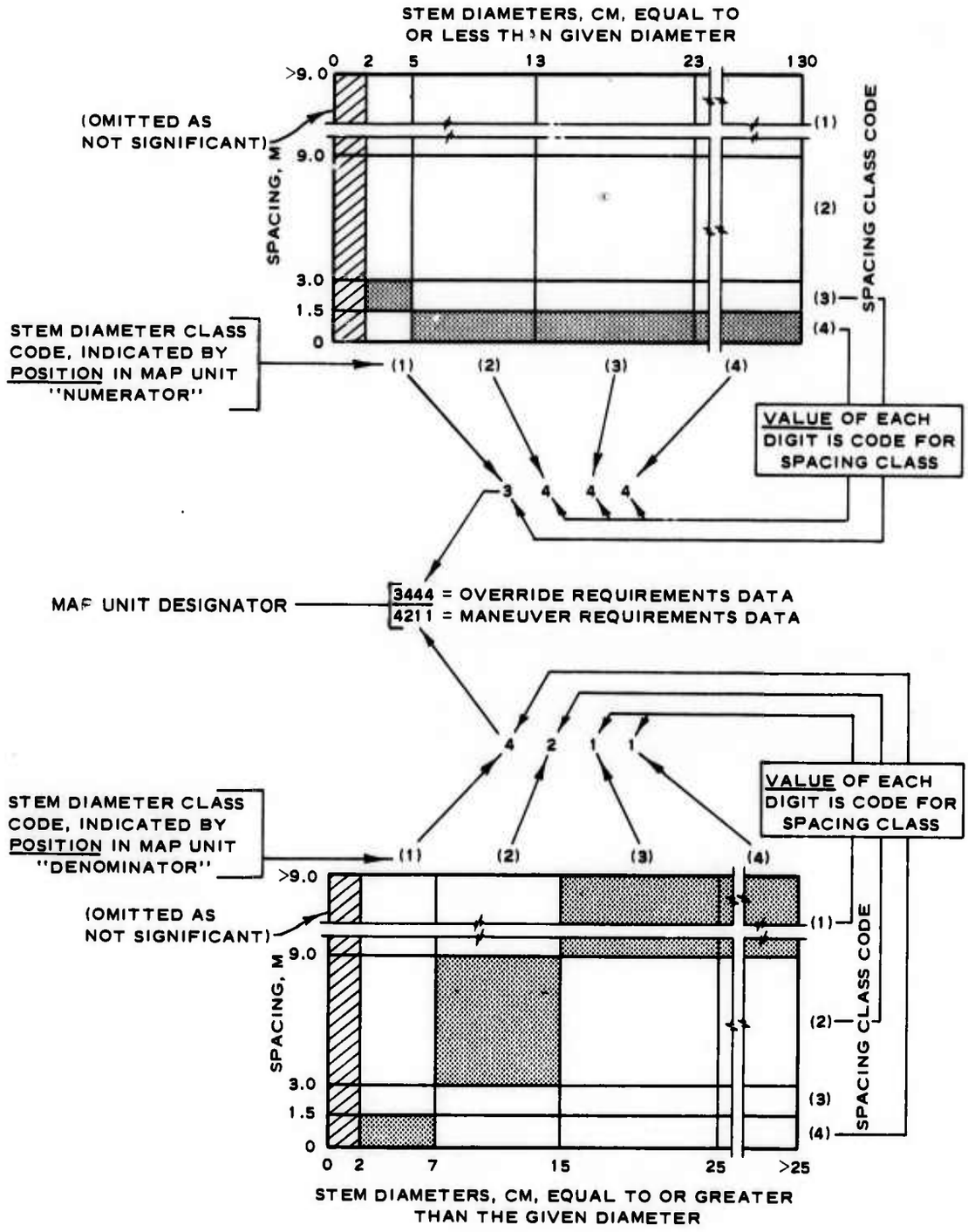


Fig. 7. Derivation of map unit designators

for their intended purpose. Because stem spacing and number of plants per unit area are directly related, the conversion is relatively simple. A procedure for this conversion is illustrated as follows:

$$P_x = N_x - N_{x-1} \tag{1}$$

where

P_x = number of plants in x-diameter class

N_x = number of plants in x-diameter class or less

N_{x-1} = number of plants in (x - 1)-diameter class or less

The utility of this relation depends upon having absolute numbers of plants in each "diameter-class-or-less" category, which are not available in the mapped data. Therefore, the problem is to extract absolute numbers for each diameter class. This obviously depends upon the size of the circular area that is being considered. Since spacing is independent of sample size, it is possible to specify spacing as a relation between an arbitrary cell diameter and plant number as follows:

$$S_y = \frac{D}{\sqrt{P_y}} \tag{2}$$

or

$$P_y = \frac{D^2}{S_y^2}$$

where

S_y = spacing of plants of y-diameter class

D = arbitrary cell diameter

P_y = total number of plants of y-diameter class in the cell of diameter D

However, since the value required is the number of plants in a given unit area (in this case, in a circle of diameter D), equation 2 can be substituted into equation 1 by the following rationalization. From equation 2 it follows that the population described by y can be assigned any definition. Thus (see fig. 8), population a can be considered to consist of

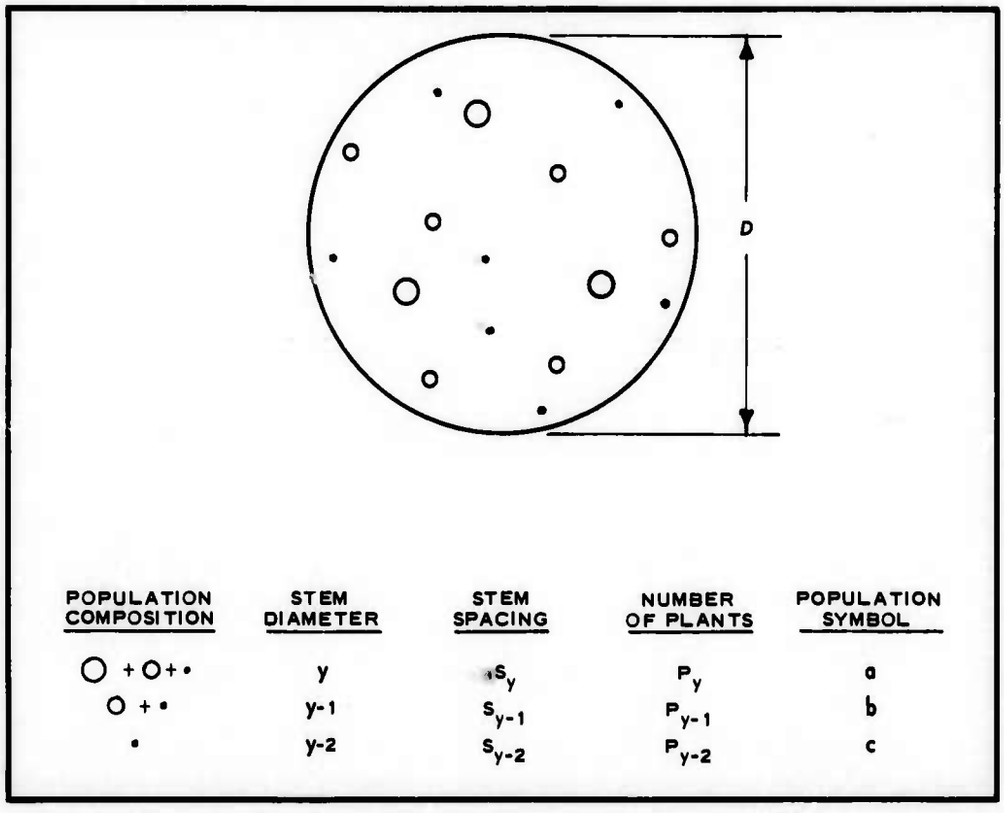


Fig. 8. Symbolization of cumulative plant populations

stem diameter classes (y) + (y - 1) + (y - 2), and population b can be considered to consist of stem diameter classes (y - 1) + (y - 2). Then the spacing of plants of population a (fig. 8) will be S_y, and the number of plants in that population will be P_y. Similarly, the spacing of population b plants will be S_{y-1}, and the number of plants in that population will be P_{y-1}. Since both of these are now real numbers, being associated with a specified area (a circle having a diameter D), a substitution of the P values of equation 2 into equation 1 as equivalents is authorized, since a dimensional number is being substituted for a nondimensional number:

$$N_x \approx P_y \text{ , } N_{x-1} \approx P_{y-1}$$

Therefore,

$$P_x = \frac{D^2}{S_y^2} - \frac{D^2}{S_{y-1}^2} \qquad (3)$$

28. With this equation it is possible to approximate the number of plants of each stem diameter class, if the spacing of that stem diameter class is known. These values can be obtained by employing certain conventions concerning the map units identified in fig. 7. These conventions are as follows:

a. Stem diameters are assumed to be measured in classes of 1 cm.

b. The relation of stem diameter to spacing within a class is assumed to be linear. The convention is illustrated for override requirements by fig. 9, and for maneuver requirements by fig. 10. For example, referring to fig. 10, using the designator from fig. 7, and interpolating spacing in stem diameter class 1, it is assumed that all stems equal to or greater than the 2- to 3-cm stem diameter class will exhibit a spacing of 0.33 m; all stems equal to or greater than 3 to 4 cm will exhibit a spacing of 0.59 m, etc. Table 1 provides all interpolated values for the spacings of stem diameters equal to or less than the given value; table 2 provides all interpolated values for the spacings of stem diameters equal to or greater than the given value.

c. When two digits in the same line of the map unit designator are identical, it is assumed that all except the first of the multiple digits are not significant. For example, in fig. 7, in the designator for override requirements data, the code is 3444. This code is interpreted as if the two terminal digits (44) are not significant. Normally, this means that there are no stems in the structure that are larger than 13 cm in diameter. In fact, there is one (see fig. 13) stem 14 cm in diameter recorded in the original data, but it is lost in the generalization process.

29. It is now possible to calculate the approximate number of plants of each stem diameter class that will be encountered in a given distance by a vehicle of specified width. The first requirement is that the mean area of each stem diameter class be obtained. Since mean area is given by the following equation:

$$A_x = \frac{A_c}{P_x} \tag{4}$$

where

A_x = mean area per plant of stem diameter class x, sq cm

A_c = total area of structural cell, sq cm

P_x = total number of plants of stem diameter class x in cell

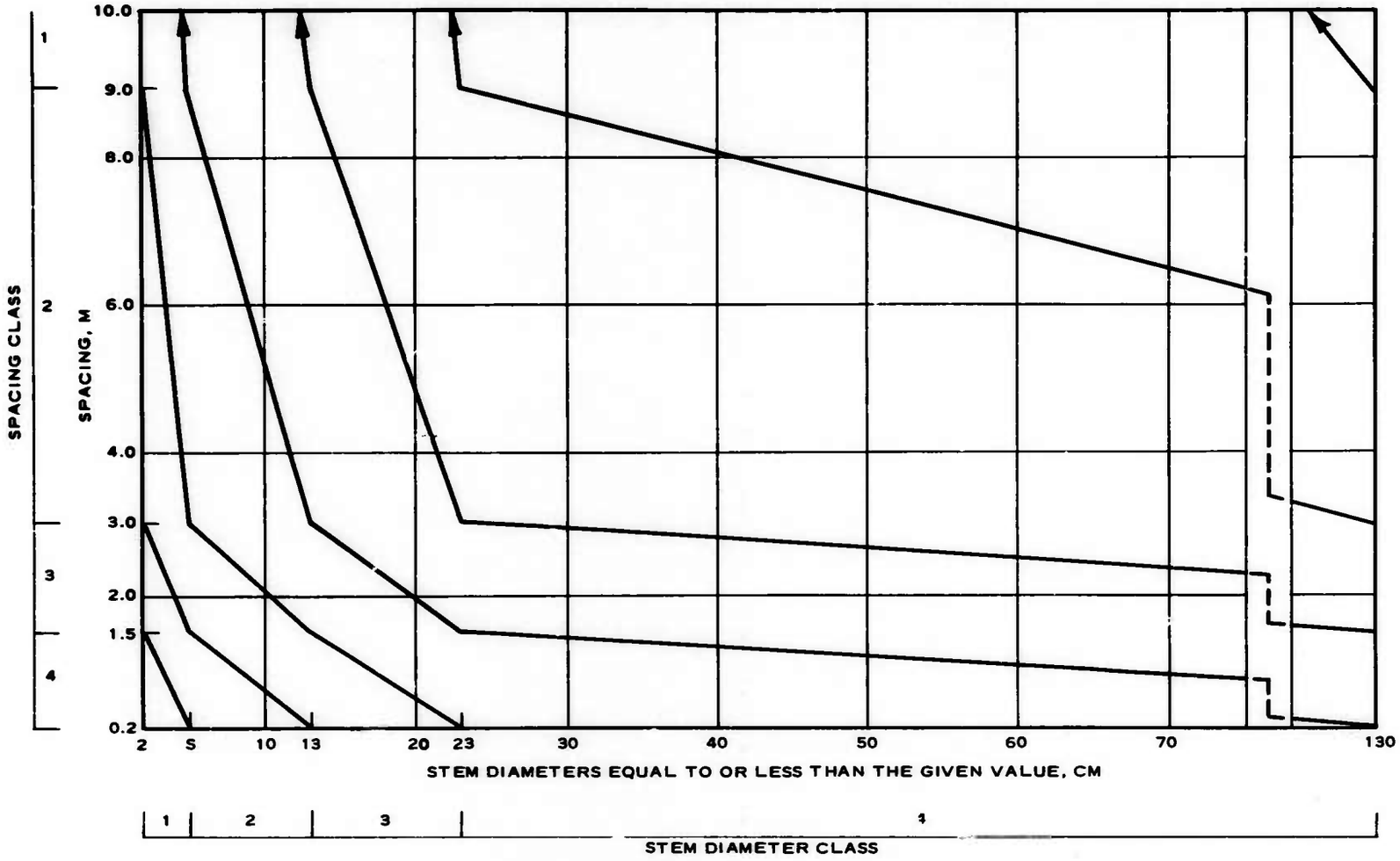


Fig. 9. Convention used to assign "equal to or less than" spacing values to specific stem diameter populations; override requirements

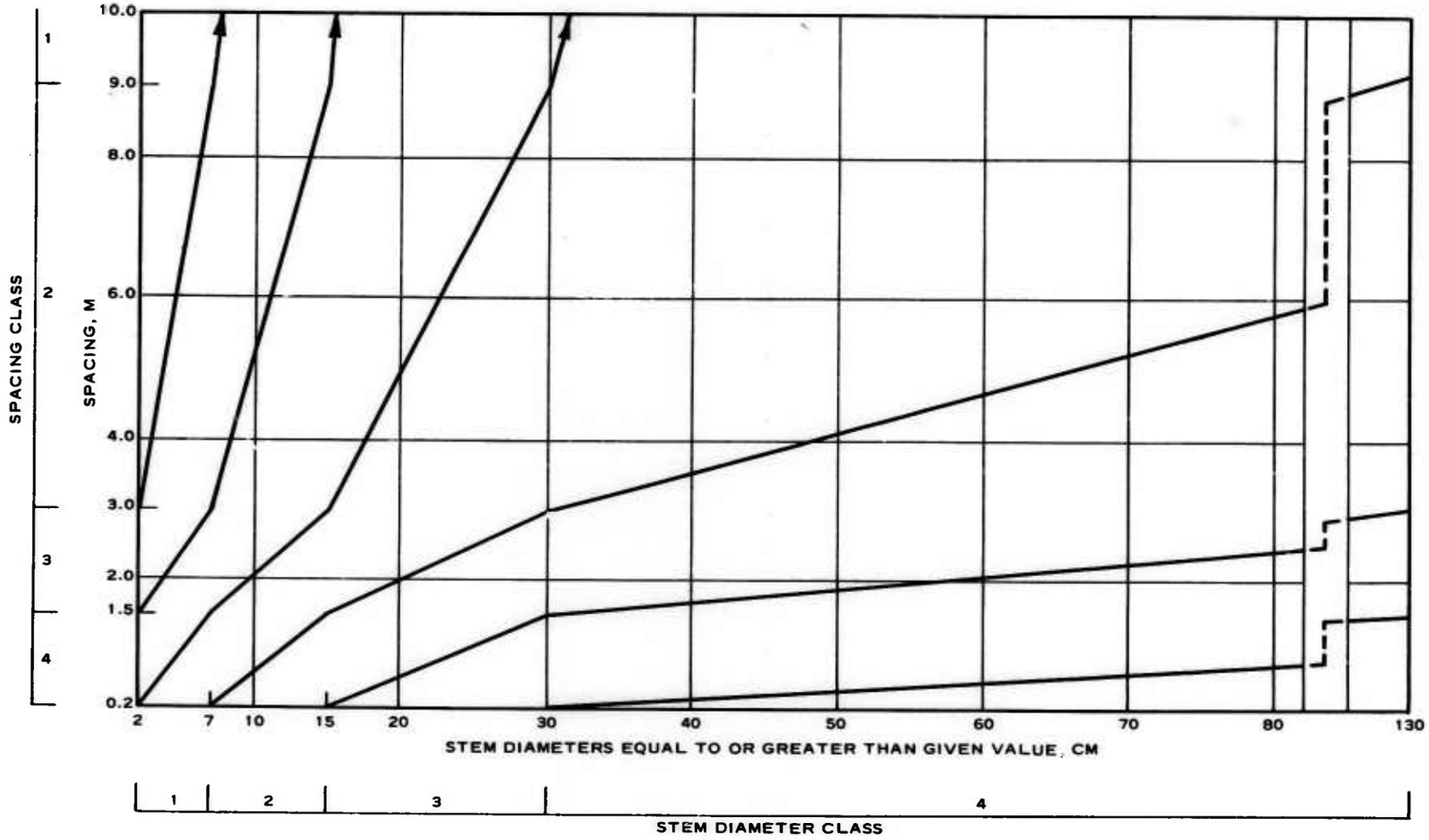


Fig. 10. Convention used to assign "equal to or greater than" spacing values to specific stem diameter populations; maneuver requirements

But:

$$A_c = \frac{\pi D^2}{4} \tag{5}$$

where

D = diameter of structural cell, cm

And, substituting equations 3 and 5 into equation 4 yields:

$$A_x = \frac{\frac{\pi D^2}{4}}{\frac{D^2}{S_y^2} - \frac{D^2}{S_{y-1}^2}} = \frac{0.7854}{\frac{1}{S_y^2} - \frac{1}{S_{y-1}^2}} \tag{6}$$

Then, assuming a vehicle w meters wide traveling a distance of d meters, the number of plants (N_v) of stem diameter class x encountered by the vehicle is given by:

$$N_v = \frac{wd}{A_x} = \frac{wd\left(\frac{1}{S_y^2} - \frac{1}{S_{y-1}^2}\right)}{0.7854} \tag{7}$$

30. For example, assuming a vehicle 3 m wide traveling a distance of 100 m, and evaluating for the number of plants of stem diameter 3 to 4 cm in spacing class 4 encountered:

$$N_v = \frac{300\ (10{,}000)\left[\frac{1}{(85)^2} - \frac{1}{(128)^2}\right]}{0.7854} = 296 \text{ plants}$$

Obviously the same process will apply to all other stem diameter classes. The work required to override these plants can now be derived directly from the formula

$$W_t = 100.0\ d_s^3$$

where

W_t = override work in foot-pounds**

d_s = stem diameter in inches

---

* Derived from vehicle field tests performed in south Mississippi and at Eglin AFB, Florida, during the MERS project.

** A table of factors for converting British units of measurement to metric units is presented on page vii.

For example, given d_s = 2 cm (0.787 in.), the override work is computed as follows:

$$W_t = 100 \times 0.787^3$$

$$W_t = 100 \times 0.487$$

$$W_t = 48.7 \text{ or } 49 \text{ (Compare with line 5, fig. 11)}$$

Fig. 11 shows the work in foot-pounds required to override stems with diameters from 0 to 27 cm.

Stem Diam, cm	Work, ft-lb	Stem Diam, cm	Work, ft-lb
0.0	0	14.0	16,745
0.5	1	14.5	18,603
1.0	6	15.0	20,595
1.5	21	15.5	22,724
2.0	49	16.0	24,995
2.5	95	16.5	27,412
3.0	165	17.0	29,981
3.5	262	17.5	32,704
4.0	391	18.0	35,589
4.5	556	18.5	38,637
5.0	763	19.0	41,856
5.5	1,015	19.5	45,247
6.0	1,318	20.0	48,819
6.5	1,676	20.5	52,571
7.0	2,093	21.0	56,514
7.5	2,574	21.5	60,646
8.0	3,124	22.0	64,978
8.5	3,747	22.5	69,508
9.0	4,449	23.0	74,247
9.5	5,232	23.5	79,194
10.0	6,102	24.0	84,359
10.5	7,064	24.5	89,740
11.0	8,122	25.0	95,349
11.5	9,281	25.5	101,184
12.0	10,545	26.0	107,255
12.5	11,918	26.5	113,560
13.0	13,407	27.0	120,112
13.5	15,014		

Fig. 11. Work required to override stems with diameters from 0.0 to 27.0 cm

Data Reduction Procedures

31. Spacing values for the various diameter classes were determined from the field data by the procedures described in the following subparagraphs. All of the reduced data are presented in Appendix A.

a. Clumps of small stems were frequent in the data, and because the near-simultaneous encounter of several small stems in a clump was believed to produce an effect on a vehicle somewhat analogous to encountering a single larger stem, clump stem diameters were converted to effective single-stem diameters. Because the relation of stem diameter to work required for override is exponential and not additive, this conversion was accomplished by applying the formula derived from the curve of stem diameters versus override work requirements as obtained during preliminary single-stem override tests conducted with the standard test vehicles. When given d_s for an average stem in a clump and the number of stems in the clump, the clumped stems can be converted to their equivalent effective stem diameters as follows:

(1) Find the given average diameter in fig. 11 and read across to number in work column.

(2) Multiply number in work column by the number of stems in the clump.

(3) In the work column in fig. 11, find the approximate product of the multiplication (step 2), and opposite it read the effective stem diameter.

Example:

Given twelve 6-cm-diameter stems in a clump, determine effective stem diameter.

Total work = (Work for 6-cm stem) (Number of 6-cm stems)
TW = (1318) (12)
= 15,816, which is >15,014 and <16,745 and is nearer the latter

Therefore, the effective stem diameter is 14 cm.

b. The number of stems of given diameters, whether real or effective, for each cell were compiled on a vegetation data reduction form as illustrated in fig. 12.

c. As previously stated, the field sampling was done according to the structural cell concept, with height classes as the determinants, i.e. plants of different height classes were sampled at different structural cell diameters. Therefore, stem diameters were variable within and among the cells of a given sample, since there is no consistent relation between plant height and stem diameter. That is, in any given structural cell, there will be 20 plants of a given height class, but in most cases the stem diameters of these plants will be distributed through a range of values as illustrated in fig. 12. In order to calculate spacing values for stems in the cumulative stem diameter ranges established previously, it was necessary to determine the number of stems

VEGETATION DATA REDUCTION

HEIGHT CLASS	CELL DIAMETER CM	NUMBER OF STEMS PER EFFECTIVE STEM DIAMETER[1] (CM)																									REMARKS
		<1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	T	
1																														
2																														
3	1500	9141		0		0		0		0		0		0		0		0		0		0		0		0		0	9141	CONVERSION AND EXTRAPOLATION USING THE EQUATION $N_2 = \left[D_2^2/D_1^2\right]\left[N_1\right]$ WHERE N = NUMBER OF STEMS D = CELL DIAMETER
4	1500	2		63		27		0		0		0		0		0		0		0		0		0		0		0	92	
5	1500	0		17		15		4		0		0		0		0		0		0		0		0		0		0	36	
6	1500	0		0		0		0		1		0		1		0		0		0		0		0		0		0	2	
7																														
8																														

[1] EFFECTIVE DIAMETER INCLUDES CLUMPS OF STEMS THAT HAVE BEEN CONVERTED TO A SINGLE DIAMETER STEM.

STUDY AREA: KHON KAEN
SITE NO.: 5-V-12
DATE SAMPLED: 11-17-64

Fig. 12. Completed tabulation of stem count, by diameters, for each structural cell

in a given diameter class that would be present in the largest cell of that sample.* The formula for the expansion is:

$$N_2 = \left(\frac{D_2^2}{D_1^2}\right) N_1 \qquad (8)$$

where

N_1 = the number of stems of a given stem diameter class in the original (i.e. from field data) cell

N_2 = the number of stems of a given diameter class in the expanded cell

D_1 = the diameter of the original cell

D_2 = the diameter of the expanded cell, i.e. largest recorded structural cell in the sample

Fig. 13 illustrates the expansion process. The analytical procedure has been programmed in FORTRAN for computer solution; columns 2 through 8** in fig. 14† are printouts of the calculated number of stems of given diameters in the expanded cell. It will be noted that the largest cell in the sample exhibits a diameter of 1500 cm (identified as HCMAX = 1500 at lower left corner of fig. 14); therefore, fig. 14 identifies the number of st ns of each height class that will be found in a circul rea 1500 cm in diameter. Fig. 15 is a printout of the FORTRAN computer program.

d. The numbers of stems in the expanded cells were summarized in fig. 14, columns 9 through 12. Column 9 shows the total number of stems of the given diameter; column 10 shows the total number of stems of given diameter and less, i.e. it shows the totals of column 9 summed cumulatively from top to bottom; and column 11 shows the total number of stems of given diameter and greater, i.e. it shows the totals of column 9 summed cumulatively from bottom to top.

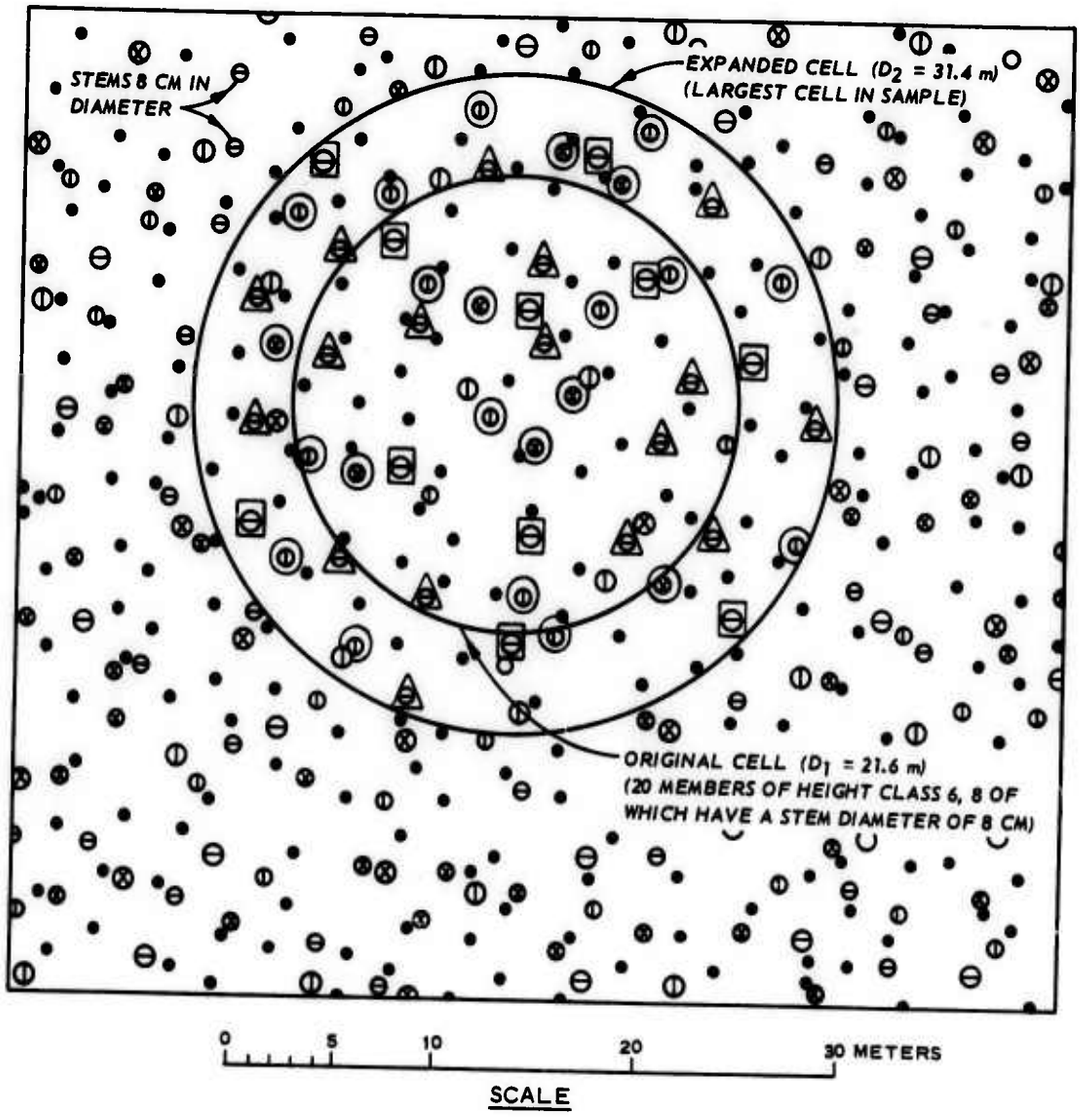
e. Spacing values were calculated for four cases: (1) for the given stem diameter; (2) for the given diameter and less;

---

* It should be recognized that height class, not stem diameter, was the determinant. It would be statistically valid to expand the cell on the basis of height class, but it is not known whether expanding the cell on the basis of stem diameter is statistically valid.

** Column numbers are encircled in fig. 14.

† Detailed explanations of the meanings of the various columns in fig. 14 are given in the explanatory notes that accompany the figure.



TO DETERMINE THE NUMBER OF STEMS HAVING A DIAMETER OF 8 CM IN THE EXPANDED CELL:

FROM EQUATION 8: $N_2 = \left(\frac{D_2^2}{D_1^2}\right) N_1 = \left(\frac{31.4^2}{21.6^2}\right) 8 = 16.88$, OR 17

THEREFORE, THERE WILL BE 17 PLANTS EXHIBITING STEM DIAMETERS OF 8 CM IN THE AREA ENCLOSED BY THE EXPANDED CELL.

Fig. 13. Expansion of original cells

STEM SPACING BY ACCUMULATIONS

PART 1 STEM DIAMETER CLASS ACCUMULATIONS

PART 2 SPACING ACCUMULATIONS

THAILAND,KHON KAEN SITE NO. 5 V 12 556011 655233

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯
	NUMBER OF STEMS FOR EACH HEIGHT CLASS IN THE EXPANDED CELL							TOTAL STEMS IN EXPANDED CELL				SPACING BY CUMULATIVE DIAM CLASS.(CM)			
EFF. STEM DIAM (CM)	1	2	3	4	5	6	7	OF GIVEN DIAM	OF GIVEN DIAM AND LESS	OF GIVEN DIAM AND GREATER	OF GIVEN DIAM AND LESS,OMIT CLASS 0.1	SPACING BY DIAM CLASS	EQUAL TO OR LESS THAN	EQUAL TO OR GREATER THAN	EQUAL TO OR LESS, OMIT CLASS 0.1
0	0.	0.	9141.	0.	0.	0.	0.	9141.	9141.	9271.	0.	16.	16.	16.	0.
1	0.	0.	0.	2.	0.	0.	0.	2.	9143.	130.	0.	1000.	16.	131.	0.
2	0.	0.	0.	38.	2.	0.	0.	40.	9183.	128.	40.	236.	16.	133.	236.
3	0.	0.	0.	25.	15.	0.	0.	40.	9223.	88.	80.	238.	16.	160.	160.
4	0.	0.	0.	7.	5.	0.	0.	12.	9235.	48.	92.	438.	16.	217.	157.
5	0.	0.	0.	14.	5.	0.	0.	19.	9253.	36.	110.	349.	16.	249.	143.
6	0.	0.	0.	7.	5.	0.	0.	12.	9265.	18.	122.	438.	16.	356.	136.
7	0.	0.	0.	0.	4.	0.	0.	4.	9269.	6.	126.	750.	16.	612.	134.
8	0.	0.	0.	0.	0.	0.	0.	0.	9269.	2.	126.	0.	16.	1061.	134.
9	0.	0.	0.	0.	0.	1.	0.	1.	9270.	2.	127.	1500.	16.	1061.	133.
10	0.	0.	0.	0.	0.	0.	0.	0.	9270.	1.	127.	0.	16.	1500.	133.
11	0.	0.	0.	0.	0.	0.	0.	0.	9270.	1.	127.	0.	16.	1500.	133.
12	0.	0.	0.	0.	0.	0.	0.	0.	9270.	1.	127.	0.	16.	1500.	133.
13	0.	0.	0.	0.	0.	0.	0.	0.	9270.	1.	127.	0.	16.	1500.	133.
14	0.	0.	0.	0.	0.	1.	0.	1.	9271.	1.	128.	1500.	16.	1500.	133.
15	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.
16	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.
17	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.
18	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.
19	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.
20	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.
21	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.
22	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.
23	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.
24	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.
25	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.
26	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.
27	0.	0.	0.	0.	0.	0.	0.	0.	9271.	0.	128.	0.	16.	0.	133.

NCMAX = 1500.

Fig. 14. Example of computer printout of reduced stem diameter-spacing data (sheet 1 of 2)

Explanatory Notes to Accompany Fig. 14

Column 1:* Effective stem diameters: identifies stem diameter classes in terms of the median value of 1-cm classes. Thus, "0" means "less than 0.5 cm," "1" means "0.5 to less than 1.5," etc.

Columns 2 to 8: Height class: identifies the number of stems of each diameter class in each height class. For example, in column 4, "9141" indicates that there are 9141 stems in the 0-cm diameter class (i.e., with diameters less than 0.5 cm) that reach height class 3. Army Map Service, Series L708, 1:50,000 map sheet identification is above column 6. Military grid coordinates are above column 8.

Column 9: Total stems of given diameter: identifies the total number of plants, of the given diameter class, calculated to be present in the largest structural cell. For example, "9141" indicates that 9141 plants exhibiting stem diameters less than 0.5 cm (class 0) would occur in a circular area 1500 cm in diameter.

Column 10: Total stems of given diameter and less: identifies the total number of plants of the given diameter class and of all lesser diameter classes that are calculated to occur in the largest structural cell. For example, "9223" indicates that 9223 plants exhibiting stem diameters of less than 3.5 cm (diameter classes 1, 2, and 3) would be found in a circular area 1500 cm in diameter. That is, it is the cumulative total, downward, of column 9.

Column 11: Total stems of given diameter and greater: Identifies the total number of plants of the given diameter class and of all greater diameter classes that would be found in the largest structural cell. For example, "88" indicates that 88 plants exhibiting stem diameters of 2.5 cm or greater (diameter classes 3, 4, 5, etc.) will be found in a circular area 1500 cm in diameter. That is, it is the cumulative total, upward, of column 9.

Column 12: Total stems of given diameter and less, omitting lines 0 and 1: identifies the total number of plants of the given diameter class and of all lesser diameter classes calculated to occur in the largest structural cell, but omitting all plants in stem diameter classes 0 and 1.

Column 13: Spacing by diameter classes: identifies the spacing exhibited by all stems of the indicated diameter class, with the plants of that class considered as an independent or isolated population. For example, "438" indicates that all plants exhibiting a stem diameter in the 4-cm class, a total of 12 plants (from column 9), will be characterized by a spacing value of 438 cm.

Column 14: Spacing by cumulative diameter classes equal to or less than: identifies the spacing exhibited by all stems of the indicated diameter class and all plants characterized by lesser stem diameters. For example: "16," at its fourth appearance in the column, indicates that all plants exhibiting stem diameters in the range from 0 to <3.5 cm (diameter classes 0, 1, 2, 3) will be characterized by a spacing value of 16 cm. That is, it is the spacing calculated on the basis of the number of stems shown in column 10 on that row.

Column 15: Spacing by cumulative diameter classes equal to or greater than: identifies the spacing exhibited by all stems of the indicated diameter class and all plants exhibiting larger stem diameters. For example, "160" indicates that all plants exhibiting stem diameters in the range from 2.5 cm to >27 cm (diameter classes 3, 4, 5, etc.) will be characterized by a spacing value of 160 cm. That is, it is spacing calculated on the basis of the number of stems shown in column 11 on that row.

Column 16: Spacing by cumulative diameter classes equal to or less than, omitting lines 0 and 1: identifies the spacing exhibited by all stems of the indicated diameter class and all plants exhibiting lesser stem diameters, except plants of stem diameter classes 0 and 1 (i.e., stem diameters less than 1.5 cm).

---

* Column numbers are encircled in fig. 14.

Fig. 14. (sheet 2 of 2)

VARIABLE LIST

MC (I), I = 1, 7	diameters of the seven height classes
STM (I, J), I = 1, 7, J = 1, 28	number of stems per height class and stem diameter
MCMAX	maximum value from MC (I) array
RT (I) I = 1, 7	ratio table for height classes
DTOT (J) J = 1, 28	total number stems in one stem diameter
DACC (J) J = 1, 28	accumulation of DTOT, 1-28
DBACC (J) J = 1, 28	accumulation of DTOT, 28-1
DACC2 (J) J = 1, 28	accumulation of DTOT, 3-28
JDM (J) J = 1, 28	names for stem diameter classes
SPCTO (J) J = 1, 28	spacing of DTOT
SPCAC (J) J = 1, 28	spacing of DACC
SPCBA (J) J = 1, 28	spacing of DBACC
SPCA2 (J) J = 1, 28	spacing of DACC2

```
C     STEM SPACING BY ACCUMULATION       84-25-X38       J. PARKS
      DIMENSION JDM(28),MC(7),STM(7,28),RT(7),DTOT(28),DACC(28)
     1,DACC2(28),SPCTO(28),SPCAC(28),SPCBA(28),SPCA2(28),DBACC(28)
    9 FORMAT (1H1)
    8 FORMAT (1X,71H
     1
   10 FORMAT (7I4)
   11 FORMAT (11,1X,20I2)
   12 FORMAT(/1X, 8HMCMAX = ,F9.0)
   13 FORMAT (30X,31HSTEM  SPACING  BY ACCUMULATIONS//1X,41HPART 1  STEM
     1 DIAMETER CLASS ACCUMULATIONS/)
   14 FORMAT (1X,24HPART 2  SPACING ACCUMULATIONS/)
   20 FORMAT (//  19X,37HNUMBER OF STEMS FOR EACH HEIGHT CLASS 17X,28HTO
     1TAL STEMS IN EXPANDED CELL/26X,20HIN THE EXPANDED CELL)
   21 FORMAT (1X,4HEFF.,9X,8HOF  GIVEN/1X,4HSTEM,7X,32HOF    OF GIVEN OF
     1GIVEN DIAM AND/1X,4HDIAM,7X,33HGIVEN DIAM AND DIAM AND LESS,6H)7/
     21X,4H)CM)6X,2H1 7X,2H2  7X,2H3 7X,2H4 7X,2H5 7X,2H6 7X,2H7 5X,33HD
     3IAM  LESS     GREATER  CLASS 0.1/)
   22 FORMAT (1X,I4,11F9.0)
   23 FORMAT (//  21X,18HSPACING BY/14X,26HCUMULATIVE DIAM CLASS.(CM))
   24 FORMAT (1HO,   4HEFF.,22X,16HEQUAL   EQUAL TO/1X,42HSTEM    SPACING
     1  EQUAL TO TO OR   OR LESS./1X,38HDIAM    BY DIAM  OR LESS  GREATE
     2R OR)7/1X,43H)CM)    CLASS    THAN     THAN     CLASS 0.1/)
   25 FORMAT (1X,I4,1P4F9.0)
C     COMPUTE STEM DIAMETER CLASSES
      JDM(1)=0
      DO  29  J=2,28
      JDM(J)=JDM(J-1)+1
   29 CONTINUE
   30 CONTINUE
      READ 8
      READ 10,(MC(I),I=1,7)
C     FIND MAXIMUM CELL DIAMETER (MCMAX)
C     FIND NUMBER OF HEIGHT CLASSES REPRESENTED (N)
      MCMAX=0.
      N=0
      DO 37 I=1,7
      IF(MC(I))33,37,33
   33 N=N+1
      IF(MCMAX-MC(I))34,37,37
   34 MCMAX=MC(I)
   37 CONTINUE
C     COMPUTE RATIOS
      MCMAX2=MCMAX*MCMAX
      DO 40 I=1,7
      RT(I)=MCMAX2/(MC(I)*MC(I))
   40 CONTINUE
C     ZERO STM(I,J)
      DO 42 I=1,7
      DO 42 J=1,28
      STM(I,J)=0.
   42 CONTINUE
      DO 44 I=1,N
C     READ STEM DIAMETERS BY CLASSES
      READ 11,(I,(STM(I,J),J=1,28)
   44 CONTINUE
C     COMPUTE NUMBER STEMS IN EXPANDED CELL
      DO 46 I=1,7
      DO 46 J=1,28
      STM(I,J)=STM(I,J)*RT(I)
```

Fig. 15. FORTRAN program of stem spacing by accumulation (sheet 1 of 2)

```
   40 CONTINUE
C     COMPUTE TOTAL NUMBER OF STEMS BY DIAMETER
      DO 40 J=1,20
      DTOT(J)=0.
      DO 40 I=1,7
      DTOT(J)= DTOT(J)+STM(I,J)
   40 CONTINUE
C     FORWARD ACCUMULATION OF TOTALS
      DACC(1)=DTOT(1)
      DO 50 J=2,20
      DACC(J)=DACC(J-1)+DTOT(J)
   50 CONTINUE
C     BACKWARD ACCUMULATION OF TOTALS
      DBACC(20)=DTOT(20)
      DO 52 J=2,20
      JJ=20-J
      DBACC(JJ)=DBACC(JJ+1)+DTOT(JJ)
   52 CONTINUE
C     FORWARD ACCUMULATION BEGINNING WITH CLASS (2)
      DACC2(1)=0.
      DACC2(2)=0.
      DACC2(3)=DTOT(3)
      DO 54 J=4,20
      DACC2(J)=DACC2(J-1)+DTOT(J)
   54 CONTINUE
      PRINT 13
      PRINT 0
      PRINT 20
      PRINT 21
      DO 96 J=1,20
      PRINT 22,J,D(J),IST(1,J),I=1,7),DTOT(J),DACC(J),DBACC(J),DACC2(J)
   96 CONTINUE
      PRINT 0
C     COMPUTE SPACING BY DIAMETER CLASS AND ACCUMULATIONS
      DO 100 J=1,20
      IF(DTOT(J))101,63,61
   61 SPCT(J)=(HC*43/SQRT(DTOT(J)))/10.0
      GO TO 65
   63 SPCT(J)=0.
   65 IF(DACC(J))67,69,67
   67 SPCAC(J)=(HC*43/SQRT(DACC(J)))/10.0
      GO TO 71
   69 SPCAC(J)=0.
   71 IF(DBACC(J))73,75,73
   73 SPCBA(J)=(HC*43/SQRT(DBACC(J)))/10.0
      GO TO 77
   75 SPCBA(J)=0.
   77 IF(DACC2(J))79,81,79
   79 SPCA2(J)=(HC*43/SQRT(DACC2(J)))/10.0
      GO TO 100
   81 SPCA2(J)=0.
  100 CONTINUE
      PRINT 14
      PRINT 23
      PRINT 24
      PRINT 25,(J,D(J),SPCT(J),SPCAC(J),SPCBA(J),SPCA2(J),J=1,20)
      PRINT 12,HC*43
      PRINT 0
      GO TO 30
      END
```

Fig. 15. (sheet 2 of 2)

(3) for the given diameter and greater; and (4) for the given stem diameter and less, with the 0- and 1-cm-diameter stems omitted. The <1-cm stems were omitted because they contributed a negligible amount to the work required to override stems. The formula[7] for the spacing calculation is:

$$S = \frac{D}{\sqrt{N_c}}$$

where

S = spacing, m

D = diameter of the expanded cell, m

N_c = number of plants in a given diameter class, or in a given diameter class or greater, or in a given diameter class or less

Fig. 16 illustrates the spacing calculation process for cases 1-3, and fig. 14 (columns 13 through 16) is an example of the computer solution for the data in fig. 12. Where "0" stem count was indicated in the data, a spacing value of "0" was assigned. Obviously this cannot be obtained from the formula, but infinity, as would be given by the equation, is not a computer printout item.

32. Portions of the data were transferred to edge-punched cards to facilitate rapid retrieval for comparison during map preparation. These cards contain both punched and written information. Punched information consists of site location according to military grid, study area, data type (vegetation), site number, and spacing classes for stem diameters equal to or less than 2, 5, 9, and 50* in. and stem diameters equal to or greater than 1, 3, 6, and 10 in. Written data consist of geographic coordinates, map, air-photo and pattern reference, proximity samples, sampling date, general vegetation type, and selected portions of the information included in fig. 14. Fig. 17 shows an example of such a card.

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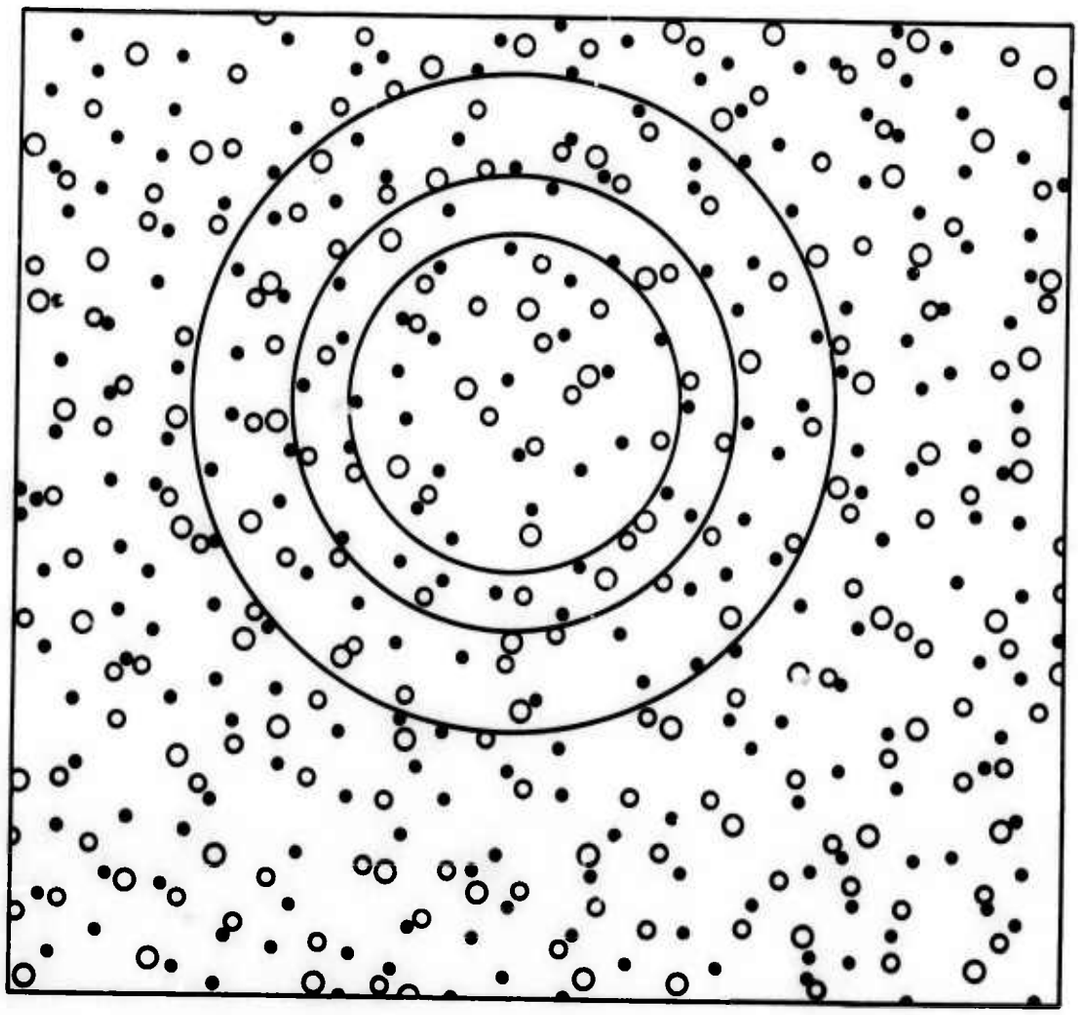
* All data are recorded in inches on the cards.



POPULATION TYPE*	CELL DIAM. m	NO OF STEMS	EXPANDED CELL DIAM. m	NO. OF STEMS			SPACING, m ($S = D/\sqrt{N_c}$)		
				BY POPULATION TYPE	≤ POPULATION TYPE	≥ POPULATION TYPE	BY POPULATION TYPE	≤ POPULATION TYPE	≥ POPULATION TYPE
○●○	16.2	20	31.4	75	75	137	3.6	3.6	2.7
○	21.6	20	31.4	42	117	62	4.6	2.9	4.0
	31.4	20	31.4	20	137	20	7.0	2.7	7.0

* STEM DIAMETER OF POPULATION TYPE ●<○<○

Fig. 16. Description of spacing of stem diameters equal to, equal to or less than, and equal to or greater than the population stem diameter

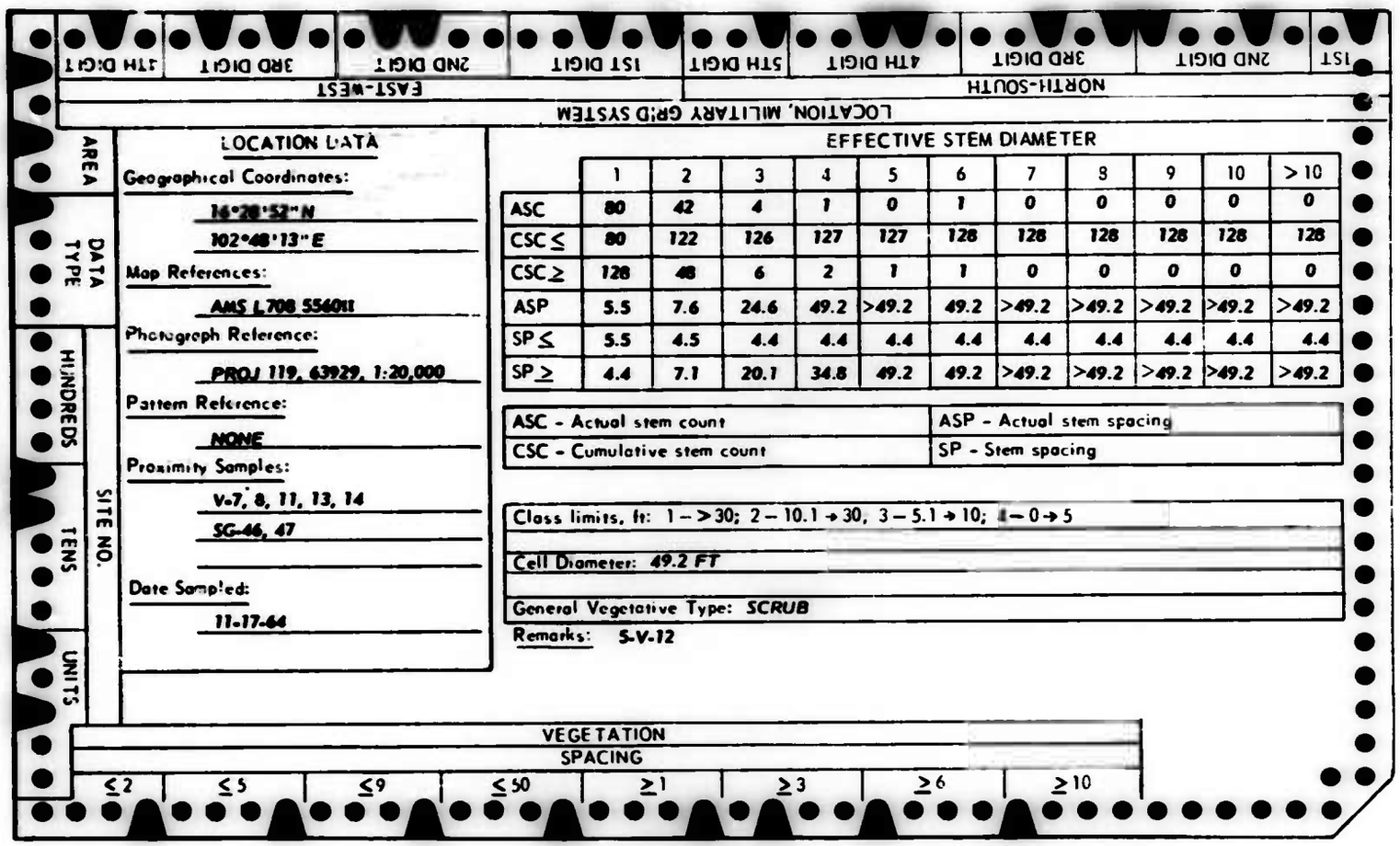


Fig. 17. Key sort card used to store vegetation data

PART IV: INTERPRETATION AND MAPPING TECHNIQUES

Photo-Interpretation Criteria

33. The first step in establishing photo-interpretation criteria was to compare the analyzed field data with the best available panchromatic aerial photography. Recognition of actual stem diameters and spacing was not possible directly from air photos, so certain keys had to be considered as indicative of vegetation type. The indicated vegetation type in turn was correlated with the required parameters. The broadest keys consisted of regional associations of land use and landforms. These keys permitted delineation of cultivated areas, plains, marshes, terraces, and hills or mountains.

34. The identification and interpretation procedures began with the careful location of each sample site on an appropriate stereopair of the air photos. The sample sites were then assembled into groups on the basis of specific ranges of stem diameter-spacing relations developed in a preliminary study. This study had revealed distinctive stem diameter-spacing relations regardless of location for crops, vegetation in village compounds, rubber plantations, bamboo stands, mangrove swamps, nipa palm areas, marshes, and low scrub. Forests exhibited great variations in their stem diameter-spacing relations both among and within the study areas.

35. When the photographic images of stem diameter-spacing groups were examined, it was found that in general a distinctive image could be related to a specific stem diameter-spacing group. Thus, image type could be interpreted with reasonable confidence in terms of stem diameter-spacing relations. Although it was believed that forests would comprise a notable and difficult exception, they proved less troublesome than had been anticipated. The photographic images of forests are extremely variable, and through careful study it became possible to identify a number of forest "types" on the basis of distinctive images. It developed that in general each such image could be coupled with a specific range of stem diameter-spacing relations (or at worst with a limited array of such relations).

36. Cultivated lands in Thailand include crops of rice (photograph 2), corn (photograph 4), jute, cassava, and numerous vegetables and fruits. On aerial photographs, the rice fields usually appear as geometric patterns of light tones and even textures (photograph 1). The presence of bunds, which appear as dark lines separating the more or less regularly shaped fields, makes the rice areas easily distinguishable from the other crops, except when the rice is mature and tends to obscure the bunds. Other crops are quite variable in tone and pattern, ranging from the even textures and light tones of corn to the dark, mottled, and semiregular fruit orchards (photograph 3). The cultivated areas are associated with floodplains and/or populated areas, except for upland crops, which are scattered in the forested areas. The upland crops are easily distinguishable on aerial photographs by a gap in the tree cover. Fortunately, the method used to analyze the data in this study placed all cropland,* excluding orchards, in the same mapping ranges of stem diameters and spacings.

37. Marshes or tropical grasses (photograph 6) can be recognized in air photos by light-medium tones and even textures (photograph 5). Topographically the marshes are situated in low flat areas, whereas the drier grasslands occur on a wide variety of low-relief surfaces. When marshes and grassland are intermingled with cultivated areas, it sometimes becomes difficult to distinguish between them on air photos. However, from the standpoint of vegetation, these areas fell into the same mapping classes, which deemphasized the need for distinguishing between them.

38. Village compounds are easily recognized on air photos by dark tones, coarse textures, and geometrical shapes (photographs 1 and 3). The villages are invariably composed of combinations of squares or rectangles, each containing living quarters and garden crops or fruit trees. The understory in villages is practically nonexistent, and diameters and spacings of the stems are dependent upon village age and predominant fruit and shade trees. The tree diameters are predominantly 15 to 23 cm, and spacing usually ranges from 3 to 9 m.

39. Rubber plantations (photograph 8) are identified on air photos

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* Croplands (vegetables and cereals, including rice) were mapped as though the crops were mature.

by medium-gray tones, medium texture, and rough geometric outline (photograph 7). When associated with forest, the rubber plantation can be delineated because of the darker tone exhibited by the forest. Normally, the rubber trees are planted in rows, but this regular pattern cannot be seen in air photos except where the trees have not matured enough to form a continuous canopy. Understory is usually absent or of minor significance. Stem diameters vary from 2 to 61 cm and must be interpreted from the photographs by tree height and/or crown diameter. Stem spacing usually varies from 3 to 9 m.

40. Bamboo is identifiable in air photos by a light-gray tone, fairly fine texture, usually feathery appearance, and radiating fronds (photograph 9). Bamboo stems grow in clumps (photograph 10), which required that the clumps be converted into effective stem diameters as described in paragraph 31a. The spacing is related to the clumps rather than to individual stems. Maturity and number of stems in the clump strongly affect mapping classes; and, where no substantiating data occur, the mapping classes are inferred from clump height and crown diameter.

41. Mangrove swamps are identified in air photos by dark, continuous tones, little or no texture, and proximity to coastal areas and tidal streams that are subjected to periodic inundation by salty or brackish water (photograph 11). Stems vary in size up to approximately 15 cm and are normally spaced at about 1.5 to 3 m. A general ground view of a mangrove swamp is shown in photograph 12.

42. Nipa palms (photograph 14) are identifiable in air photos by a medium tone, fine texture, feathery appearance, uniform height, and constant topographic position (photographs 11 and 13). These palms are located inland and upstream from mangrove swamps, forming the transition zone between fresh and brackish water. The tones and textures of rice fields immediately adjacent to nipa swamps (photograph 13) are often similar to those of nipa; the boundary between the two types of vegetation is usually determined by the presence of bunds surrounding the rice fields. Such juxtapositions are fairly widespread because an expanding agricultural economy and a diminishing use of nipa thatch demand that rice cultivation replace nipa wherever possible.

43. Scrub vegetation (photograph 16) is identified in air photos by light to medium tones and an irregular texture (photograph 15). These areas usually form the transition zone between cultivated areas and adjacent hills or mountains. Small areas located on hills or mountains are cleared sporadically and cultivated for short periods (up to 2 years). Such areas quickly revert to scrub after being abandoned. Areas of non-productive soil located on flat to gently rolling topography are usually characterized by scrub vegetation. Attempts have been made from time to time to extend rice agriculture into areas unsuited for it, notably the Khon Kaen and Nakhon Sawan study areas; when rice fields in such areas are abandoned, they quickly revert to scrub. Nearly all accessible scrub areas in Thailand are exploited for charcoal, and since most of the larger diameter trees are suitable for this purpose, stems over 15 cm in diameter are rarely encountered. Scrub areas normally exhibit a predominant stem spacing of less than 1.5 m.

44. Forests (photograph 18) are relatively easy to identify in air photos. They are characterized by a medium to dark tone and a granular texture, and their height is apparent when viewed stereoscopically (photograph 17). Direct identification of specific characteristics such as stem spacing and diameter is difficult if not impossible. However, field sampling has revealed that stems with diameters greater than 25 cm are generally spaced more than 9 m apart, and this fact, coupled with the tendency for a specific stem diameter-spacing class to be associated with a distinctive photographic image as discussed in paragraph 35, permitted reasonably reliable estimates to be made of the needed values.

45. Minimum effort was devoted to developing identification criteria for other vegetation types such as garden crops, orchards, and coconut (photograph 20), and sugar-palm assemblages (photograph 19). In general, these areas are either too small to be shown at the scale of presentation or do not affect vehicle mobility significantly.

Map Preparation

46. Prior to actual map preparation, mosaics were constructed from

existing photographs and converted to a scale of 1:50,000 (scale of the base maps selected for use in this study). Sample sites were located on the mosaics and annotated with the classification of the vegetation on each site. Stereoscopic examination of the corresponding photographs permitted these classifications to be extrapolated to contiguous areas by utilizing the previously described photo-interpretation criteria. Noncontiguous areas exhibiting characteristics of tone, texture, land use, and regional landforms similar to those of classified areas were mapped accordingly. Noncontiguous areas with photographic patterns different from those of classified areas were defined on the basis of tree height, crown cover, crown diameter, geographic location, and the interpreter's knowledge and experience. This procedure was continued until all the study areas had been mapped. The accuracy of vegetation factors portrayed on the maps was dependent upon scale, quality, and date of air photos and the availability of field data within identified photo patterns. Fig. 1 shows the locations of the study areas and the scale and date of aerial photography used in the mapping program.

47. After the areas had been mapped on the individual aerial photographs, the information was transferred to the 1:50,000 mosaic and from there to a 1:50,000 base sheet. Each outlined area was identified by a numerator-denominator array of numbers. The four-digit numerator identified the spacing class of stems with diameters less than or equal to 5, 13, 23, and 130 cm, and the four-digit denominator represented the spacing class of stems with diameters greater than or equal to 2, 7, 15, and 25 cm. After all study areas had been mapped, a tabulation of each distinctive numerator-denominator combination was made that revealed 72 combinations, or map classes. To simplify the cartographic process, a number between 1 and 72 was assigned to represent each map class on the final maps. To simplify the presentation of the values, each number representing the denominator of the fraction was placed to the right of the numerator on the final legend.

48. The vegetation factor-family maps of the six study areas are presented in Volume VIII of this report series. These maps are on base sheets at a scale of 1:50,000 taken from the Army Map Service (AMS) Series L708. The limits of these maps do not, in all instances, coincide with

those of the AMS sheets because new base sheets were made, where needed, to reduce the number of partially mapped sheets (see fig. 18). These limit changes involved, in most cases, shifting the latitudes or longitudes 5 or 10 deg from those of the AMS sheets. Preparation of new base sheets resulted in a reduction of the total number of base sheets covering the six study areas from 32 to 25.

49. An example of a portion of a vegetation factor-family map of the Lop Buri study area (LB III sheet) and the accompanying legend are shown in fig. 19. Since only a portion of the map is shown, all combinations included in the legend do not occur on the map segment.

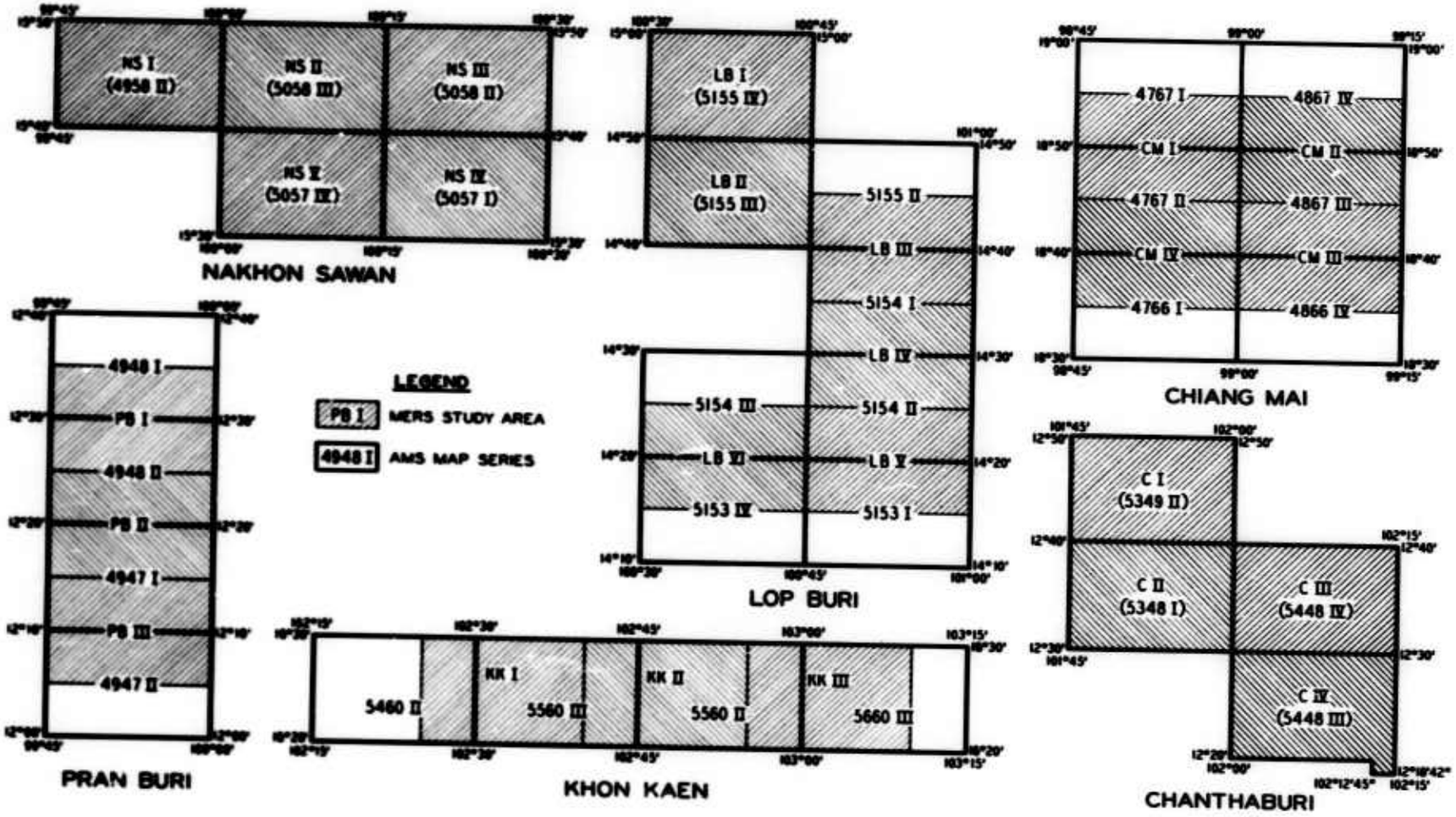


Fig. 18. Relation of MERS and AMS quadrangles

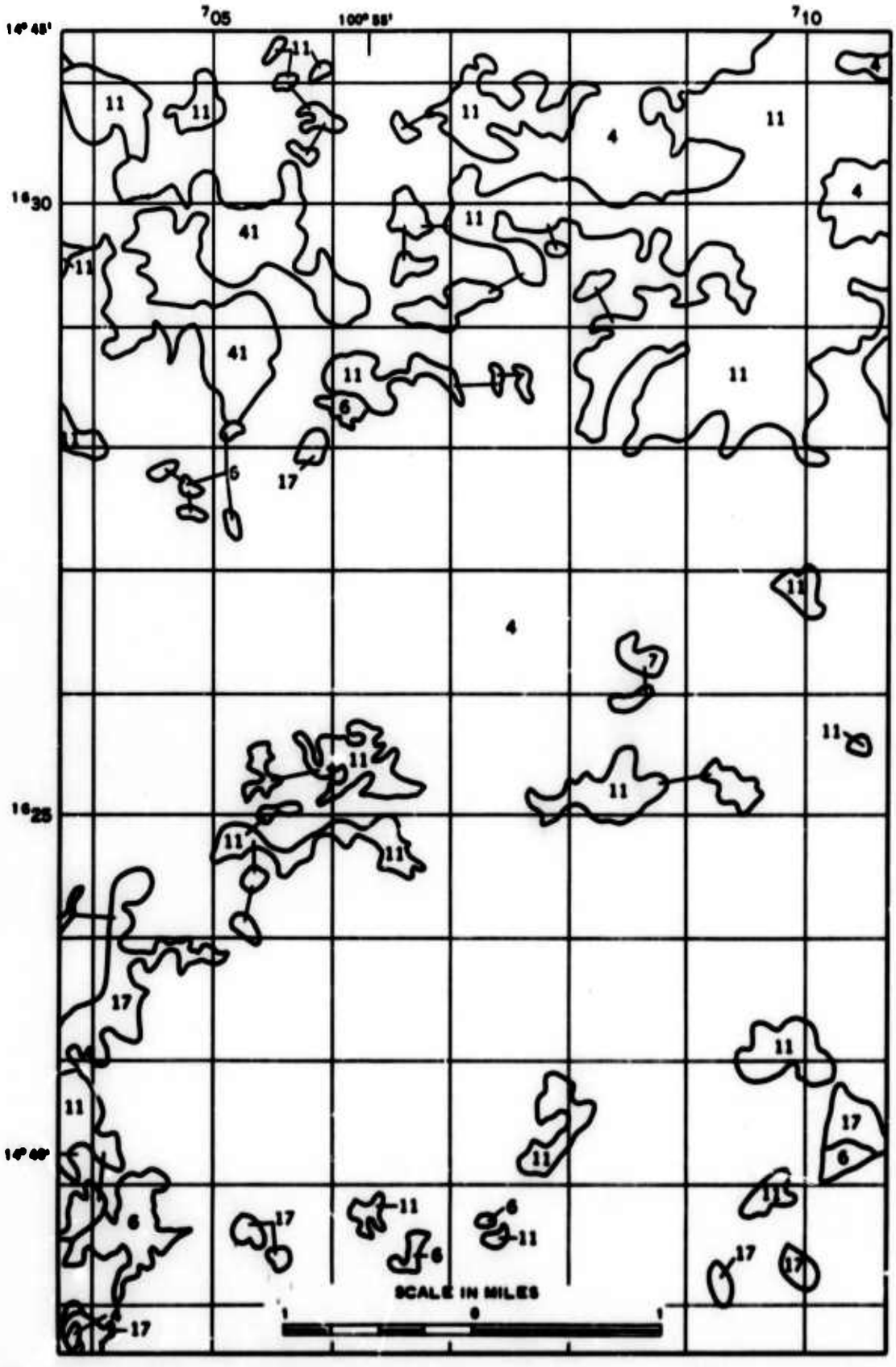
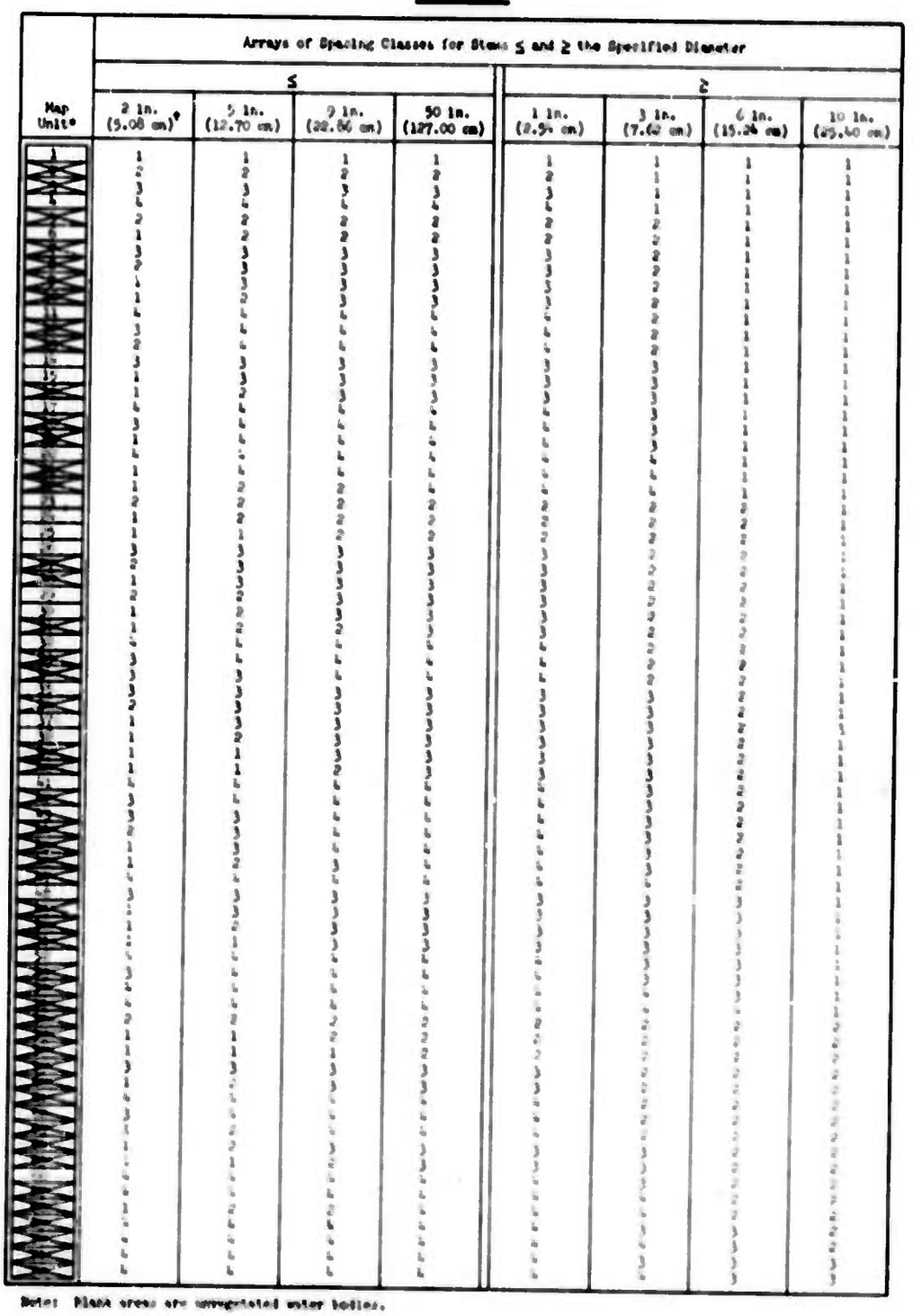


Fig. 19. Vegetation factor-family map of a portion of MERS sheet LB III in the Lop Buri study area (sheet 1 of 2)

LEGEND



Note: Blank areas are unvegetated water bodies.

* Each map unit represents an array of eight symbols (i.e. 1, 1, 1, 1, 1, 1, 1, 1.) indicating spacing classes for stems ≤ 2, 5, 9, and 50 in. (≤ 5.08, 12.70, 22.86, and 127.00 cm) and ≥ 1, 3, 6, and 10 in. (2.54, 7.62, 15.24, and 25.40 cm).

† Mapping class ranges for each spacing class are:

Mapping Class	Meters	
	ft	m
1	> 30	> 9
2	> 10-30	> 3-9
3	> 5-10	> 1.5-3
4	0-5	0-1.5

Units do not occur on this map.

Fig. 19 (sheet 2 of 2)

PART V: CONCLUSIONS AND RECOMMENDATIONS

Conclusions

50. Vegetation attributes known to affect cross-country vehicle performance were mapped for the six study areas in Thailand. These attributes (stem spacing and stem diameter) were identified in quantitative terms that present an override or maneuver situation to vehicles (paragraphs 23 and 24). In practically all instances, these characteristics could not be measured directly from the air photos (paragraph 33). Nevertheless, interpretation keys were developed by associating field measurements with photograph patterns (geometry, tone, and texture), and the vegetation factors were mapped with acceptable reliability (paragraph 33).

51. The techniques used for extrapolating and mapping are theoretically sound, but the accuracy of vegetation factors portrayed on the maps is dependent upon scale, quality, and date of air photos (paragraph 46), and availability of field data to verify the classification of vegetation parameters from patterns exhibited in air photos. The new large-scale photographs of the Lop Buri and Pran Buri areas resulted in the compilation of more accurate maps. However, the restriction imposed by lack of passable roads, which made obtaining field samples in all parts of the study areas impracticable (paragraph 10), reduced the reliability of the mapped vegetation factors particularly for photo patterns where field data were absent.

Recommendations

52. Because the Thailand study areas do not include all Southeast Asian vegetation types, surveys should be conducted to determine the extent and importance of other vegetation types in Thailand and other countries in Southeast Asia. Selected samples should be acquired in these countries, particularly in relatively level, high-bearing-capacity soils with virgin or mature vegetation stands. Similarly, any of the vegetation types unique to one or more of the respective countries but widespread

enough to be considered in a mobility operation should be sampled for information and record.

53. Because the keys used in this study to interpret vegetation characteristics from panchromatic air photos are by no means complete, additional research is needed to determine the expectable degree of accuracy in interpreting stem spacing and diameter and other vegetation characteristics. The effect of scale on air-photo interpretation should also be studied.

54. Additional vehicle tests should be conducted on clumped plants to validate or modify the "effective diameter" approach taken in this study. This is the least substantiated facet of the vegetation sampling, testing, and predicting programs used in the MERS study.

55. Vegetation mapping units not included in the field test program should be included in future mobility test programs.

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Table 1

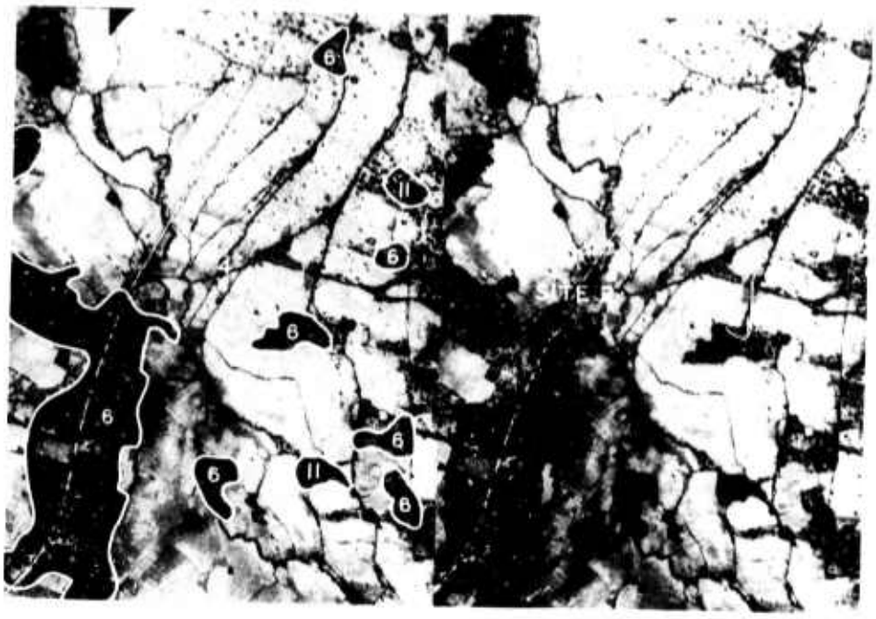
Interpolated Values for the Spacings of Stem Diameters Equal to or Less Than the Given Value

Stem Diameter Class	Stem Diameter Value, cm	Assumed Spacing, m			
		0.2-1.5 (Spacing Class 4)	>1.5-3.0 (Spacing Class 3)	>3.0-9.0 (Spacing Class 2)	>9.0 (Spacing Class 1)
1	2-3	1.28	2.75	8.0	31.5
	3-4	0.85	2.25	6.0	22.5
	4-5	0.42	1.75	4.0	13.5
2	5-6	1.42	2.91	8.6	34.3
	6-7	1.26	2.72	7.9	30.9
	7-8	1.09	2.53	7.1	27.6
	8-9	0.93	2.34	6.4	24.2
	9-10	0.77	2.16	5.6	20.8
	10-11	0.61	1.97	4.9	17.4
	11-12	0.44	1.78	4.1	14.1
	12-13	0.28	1.59	3.4	10.7
3	13-14	1.44	2.93	8.7	34.7
	14-15	1.31	2.78	8.1	32.0
	15-16	1.18	2.63	7.5	29.3
	16-17	1.05	2.48	6.9	26.6
	17-18	0.92	2.33	6.3	23.9
	18-19	0.79	2.18	5.7	21.2
	19-20	0.66	2.03	5.1	18.5
	20-21	0.53	1.88	4.5	15.8
	21-22	0.40	1.73	3.9	13.1
	22-23	0.27	1.58	3.3	10.4
4	23-24	1.49	3.00	9.0	35.9
	24-25	1.48	2.98	8.9	35.6
	25-30	1.45	2.94	8.8	34.9
	30-35	1.38	2.87	8.6	33.6
	35-40	1.32	2.80	8.3	32.3
	40-45	1.26	2.73	8.0	31.1
	45-50	1.20	2.66	7.7	29.8
	50-60	1.11	2.58	7.3	28.0
	60-70	0.99	2.40	6.7	25.4
	70-80	0.83	2.29	6.2	22.9
	80-90	0.75	2.12	5.6	20.4
	90-100	0.62	2.01	5.1	17.8
	100-110	0.51	1.87	4.5	15.4
	110-120	0.39	1.76	3.9	12.8
	120-130	0.26	1.59	3.3	10.2

Table 2

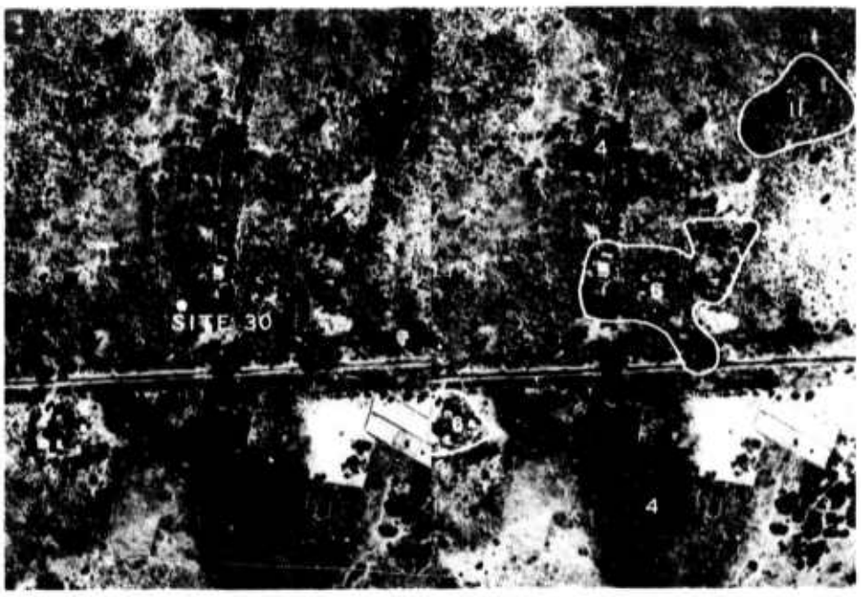
Interpolated Values for the Spacings of Stem Diameters Equal to or Greater Than the Given Value

Stem Diameter Class	Stem Diameter Value, cm	Assumed Spacing, m			
		0.2-1.5 (Spacing Class 4)	>1.5-3.0 (Spacing Class 3)	>3.0-9.0 (Spacing Class 2)	>9.0 (Spacing Class 1)
1	<2	0.20	--	--	--
	2-3	0.33	1.65	3.6	11.7
	3-4	0.59	1.95	4.8	17.1
	4-5	0.85	2.25	6.0	22.5
	5-6	1.11	2.55	7.2	27.9
	6-7	1.37	2.85	8.4	33.3
2	7-8	0.28	1.59	3.4	10.7
	8-9	0.44	1.78	4.1	14.1
	9-10	0.61	1.97	4.9	17.4
	10-11	0.77	2.16	5.6	20.8
	11-12	0.93	2.34	6.4	24.2
	12-13	1.09	2.53	7.1	27.6
	13-14	1.26	2.72	7.9	30.9
	14-15	1.42	2.91	8.6	34.3
3	15-16	0.27	1.58	3.3	10.4
	16-17	0.40	1.73	3.9	13.1
	17-18	0.53	1.88	4.5	15.8
	18-19	0.66	2.03	5.1	18.5
	19-20	0.79	2.18	5.7	21.2
	20-21	0.92	2.33	6.3	23.9
	21-22	1.05	2.48	6.9	26.6
	22-23	1.18	2.63	7.5	29.3
	23-24	1.31	2.78	8.1	32.0
	24-25	1.44	2.93	8.7	34.7
4	25-30	0.23	1.54	3.1	9.6
	30-35	0.29	1.61	3.4	10.9
	35-40	0.35	1.68	3.7	12.2
	40-45	0.41	1.75	4.0	13.5
	45-50	0.47	1.82	4.3	14.8
	50-60	0.57	1.93	4.7	16.7
	60-70	0.69	2.07	5.3	19.3
	70-80	0.81	2.21	5.9	21.9
	80-90	0.94	2.36	6.4	24.4
	90-100	1.06	2.50	7.0	27.0
	100-110	1.19	2.64	7.6	29.6
	110-120	1.31	2.79	8.1	32.1
	120-130	1.43	2.93	8.7	34.7



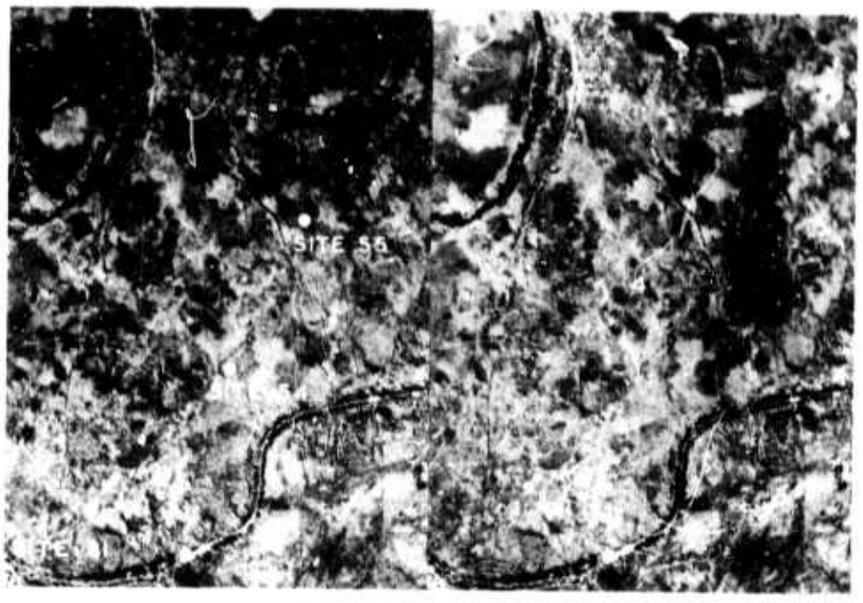
Photograph 1. Stereopair of vertical air photos of site 3-V-2 and vicinity in the Chiang Mai study area showing village compounds and rice paddies (1:25,000; 18 Jan 54)

Photograph 2. Stereoscopic view of rice paddy at site 3-V-2 (mapping class 4) in the Chiang Mai study area (12 Sept 64)



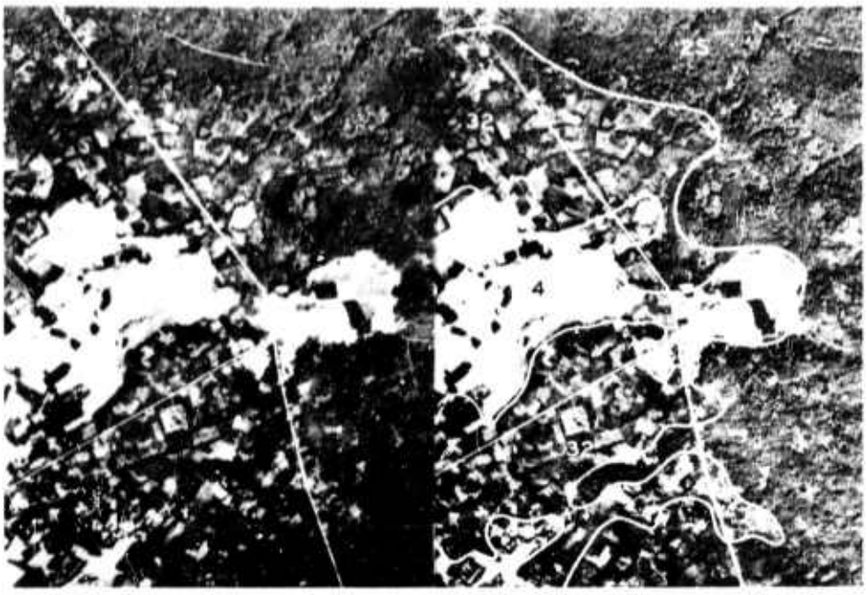
Photograph 3. Stereopair of vertical air photos of site 1-V-30 and vicinity in the Nakhon Sawan study area showing nonirrigated crops, low scrub, and small village compounds (1:5,000; 19 Jan 65)

Photograph 4. Stereoscopic view of site 1-V-30 (mapping class 4) in the Nakhon Sawan study area showing a nearly mature corn crop (5 Aug 64)



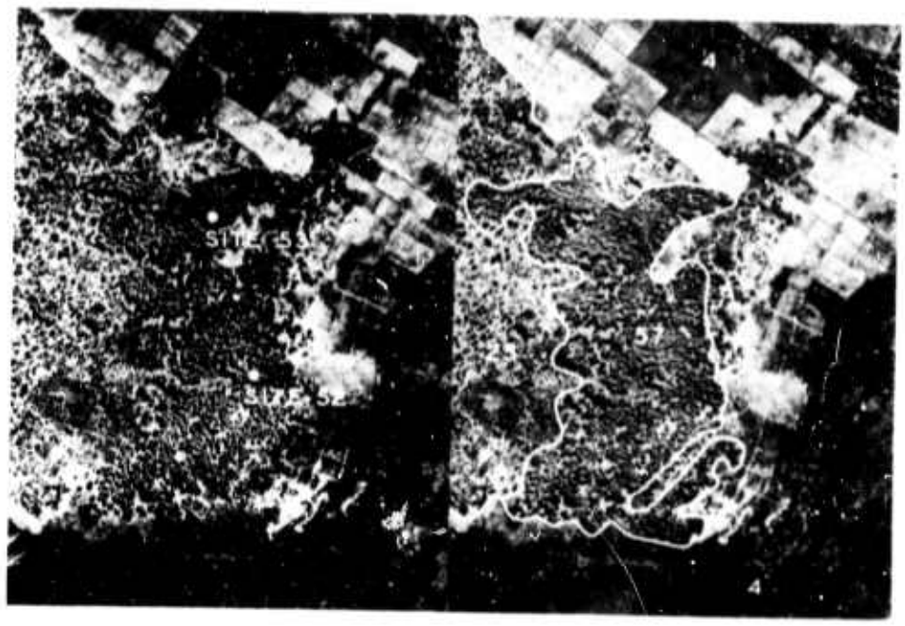
Photograph 5. Stereopair of vertical air photos of sites 4-V-54, 4-V-55, and 4-V-61 and vicinity in the Pran Buri study area showing a large marsh (1:15,000; 27 Dec 64)

Photograph 6. Stereoscopic view of marsh vegetation at site 4-V-54 (mapping class 4) in the Pran Buri study area (28 Apr 65)



Photograph 7. Stereopair of vertical air photos in vicinity of sites 6-V-12 and 6-V-15 in the Chanthaburi study area showing extensive rubber plantations and intermixed orchards, scrub, and paddies (1:40,000; 13 Feb 53)

Photograph 8. Stereoscopic view of site 6-V-12 (mapping class 25) in the Chanthaburi study area showing rubber trees. These trees have diameters averaging 9 in. (16 Feb 65)

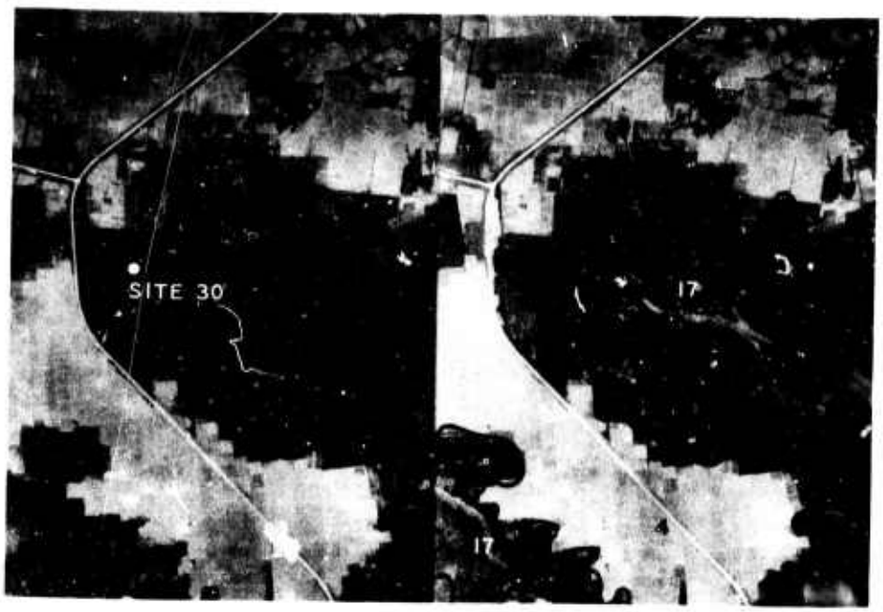


Photograph 9. Stereopair of vertical air photos of sites 4-V-52 and 4-V-53 and vicinity in the Pran Buri study area showing bamboo, marsh, and rice paddies (1:15,000; 27 Dec 64)

Photograph 10. Stereoscopic view of strongly clumped bamboo at site 4-V-52 (mapping class 57) in the Pran Buri study area (23 Apr 65)

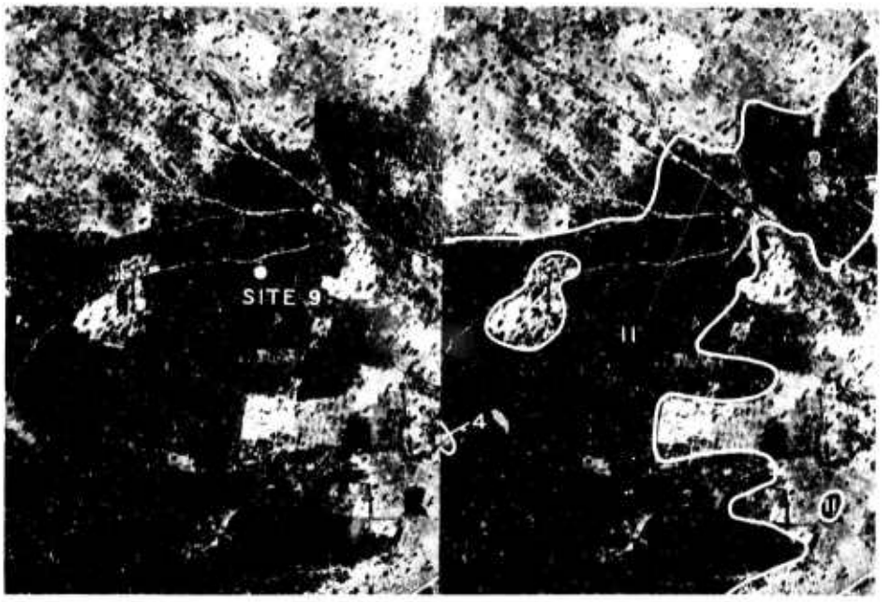
Photograph 11. Stereopair of vertical air photos of site 6-V-29 and vicinity in the Chanthaburi study area showing mangrove, scattered nipa palm, and rice paddies (1:23,000; 13 Jan 55)

Photograph 12. General view of low mangroves adjoining tidal mud flats typical of the Chanthaburi and other coastal areas. The mangroves increase in size and exhibit a more stilted root system farther inland and along tidal estuaries

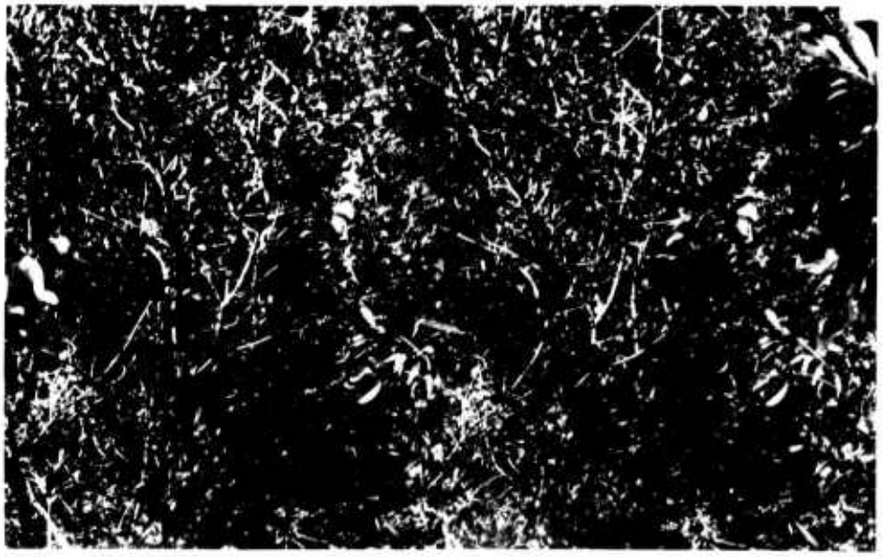


Photograph 13. Stereopair of vertical air photos of site 6-V-30 and vicinity in the Chanthaburi study area showing nipa palms and rice paddies (1:23,000; 13 Jan 55)

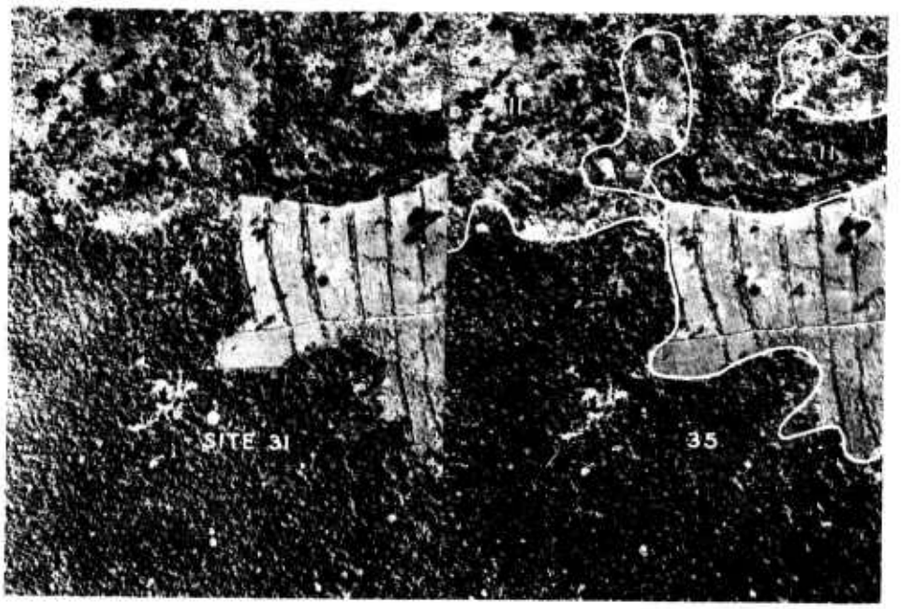
Photograph 14. Stereoscopic view of site 6-V-30 (mapping class 17) in the Chanthaburi study area showing nipa palms adjoining brackish waterways (5 Mar 65)



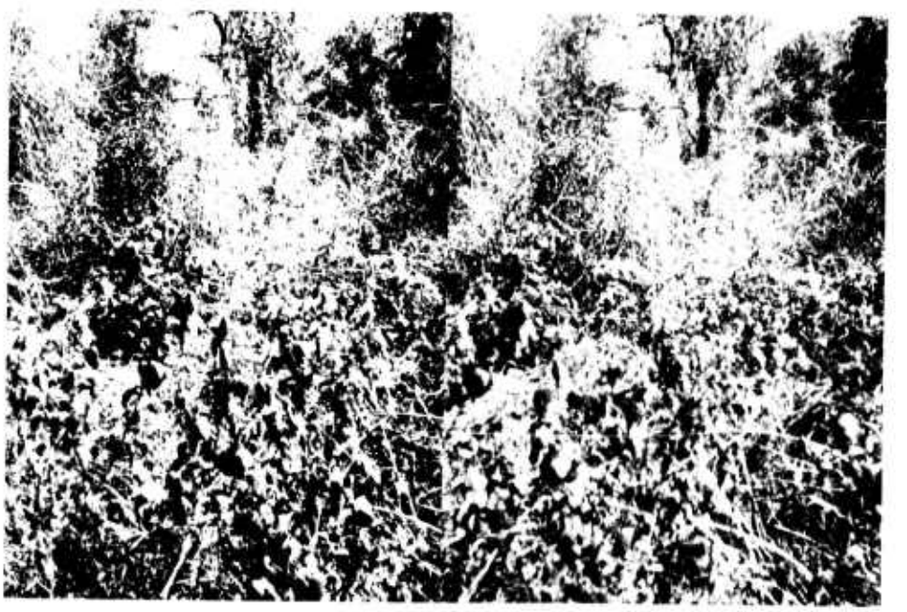
Photograph 15. Stereopair of vertical air photos of site 5-V-9 and vicinity in the Khon Kaen study area showing dense scrub surrounded by rice paddies (1:20,500; 15 Jan 54)



Photograph 16. Stereoscopic view of dense scrub at site 5-V-9 (mapping class 11) in the Khon Kaen study area (15 Nov 65)



Photograph 17. Stereopair of vertical air photos of site 4-V-31 and vicinity in the Pran Buri study area showing forest with dense undergrowth. The cultivated area is sugarcane (1:15,000; 1 Jan 65)



Photograph 18. Stereoscopic view of forest with very dense undergrowth at site 4-V-31 (mapping class 35) in the Pran Buri study area (21 Apr 65)

Photograph 19. Stereopair of vertical air photos of site 6-V-10 and vicinity in the Chanthaburi study area showing intermixed orchards, paddies, and scrub (1:15,000; 13 Jan 55)

Photograph 20. Stereoscopic view of site 6-V-10 (mapping class 58) in the Chanthaburi study area. These palms have diameters larger than 10 in. (21 Feb 65)

APPENDIX A: SUMMARY OF VEGETATION FIELD DATA

NAKHON SAWAN STUDY AREA

Table A1

Vegetation Site Summation

Nakhon Sawan

Site No.	Location: Map Sheet*	Location: Grid Coordinates	Location: Fig. No.	Date Sampled
1-V-1	5058III	187366	A2	3 Aug 1964
1-VTS-1	5057IV	312312	A5	21 Aug 1964
1-VTS-2	5057IV	310311	A5	21 Aug 1964
1-V-2	4958I	894655	**	3 Aug 1964
1-V-3	4958I	874679	**	2 Aug 1964
1-V-5	4958I	873680	**	2 Aug 1964
1-V-6	4958II	989446	A1	1 Aug 1964
1-V-7	5058III	161364	A2	3 Aug 1964
1-V-8	5057IV	252314	A5	23 July 1964
1-V-9	5057IV	284315	A5	22 July 1964
1-V-10	5057I	363286	A4	21 July 1964
1-V-11	5057I	571219	A4	21 July 1964
1-V-12	5057IV	211305	A5	6 Aug 1964
1-V-13	5057IV	212306	A5	6 Aug 1964
1-V-14	5057IV	210186	A5	7 Aug 1964
1-V-15	5057IV	212138	A5	7 Aug 1964
1-V-16	5057II	198320	A5	1 Aug 1964
1-V-17	5057IV	239205	A5	4 Aug 1964
1-V-18	5057IV	202242	A5	5 Aug 1964
1-V-19	4958I	847671	**	28 Aug 1964
1-V-21	5057IV	168258	A5	9 Aug 1964
1-V-22	5057IV	166276	A5	18 Aug 1964
1-V-23	5057IV	178284	A5	19 Aug 1964
1-V-24	5058III	182329	A2	22 Aug 1964
1-V-26	5058III	205363	A2	20 Aug 1964
1-V-27	5058III	176361	A2	6 Aug 1964
1-V-28	5058III	171362	A2	18 Aug 1964
1-V-29	5058III	212384	A2	20 Aug 1964
1-V-30	5057IV	212215	A5	5 Aug 1964
1-V-31	5058III	137378	A2†	5 Aug 1964
1-V-32	5058III	138377	A2†	5 Aug 1964
1-V-35	5057IV	215180	A5	28 Aug 1964
1-V-37	5058III	223332	A2	24 Aug 1964
1-V-38	5058III	211339	A2	25 Aug 1964
1-V-39	5057IV	213301	A5	26 Aug 1964
1-V-41	5057IV	212296	A5	30 Aug 1964
1-V-42	5057IV	223265	A5	24 Aug 1964
1-V-43	5057IV	224267	A5	23 Aug 1964
1-V-45	4958I	852677	**	29 Aug 1964

Note: Missing site numbers are the result of sites having been preselected and numbered but not sampled. Grid coordinates are set up according to Military Grid System; the first three numbers represent longitude, and the second three numbers represent latitude.

* AMS, L708, 1:50,000.

** Site outside figure limits.

† All stems <1 in.

Table A2

Summary of Vegetation Field Data

Nakhon Sawan

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter* (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
1-V-1	5058III	187366	32.8	29	1	23	23	29	6.9	6.9	6.1
					2	3	26	6	19.0	6.4	13.4
					3	0	26	3	>32.8	6.4	19.0
					4	1	27	3	32.8	6.3	19.0
					5	0	27	2	>32.8	6.3	32.8
					6	0	27	2	>32.8	6.3	32.8
					7	2	29	2	23.2	6.1	23.2
					8	0	29	0	>32.8	6.1	>32.8
					9	0	29	0	>32.8	6.1	>32.8
					10	0	29	0	>32.8	6.1	>32.8
					>10	0	29	0	>32.8	6.1	>32.8
1-VTS-1	5057IV	312312	65.6	58	1	32	32	58	9.9	9.9	8.6
					2	23	55	26	13.7	8.9	12.9
					3	2	57	3	46.5	8.7	37.8
					4	0	57	0	>65.6	8.7	>65.6
					5	0	57	0	>65.6	8.7	>65.6
					6	0	57	0	>65.6	8.7	>65.6
					7	0	57	0	>65.6	8.7	>65.6
					8	0	57	0	>65.6	8.7	>65.6
					9	0	57	0	>65.6	8.7	>65.6
					10	0	57	0	>65.6	8.7	>65.6
					>10	1	58	1	65.6	-	65.6
1-VTS-2	5057IV	310311	49.2	25	1	16	16	25	12.3	12.3	9.8
					2	8	24	9	17.4	10.0	16.4
					3	1	25	1	49.2	9.8	49.2
					4	0	25	0	>49.2	9.8	>49.2
					5	0	25	0	>49.2	9.8	>49.2
					6	0	25	0	>49.2	9.8	>49.2
					7	0	25	0	>49.2	9.8	>49.2
					8	0	25	0	>49.2	9.8	>49.2
					9	0	25	0	>49.2	9.8	>49.2
					10	0	25	0	>49.2	9.8	>49.2
					>10	0	25	0	>49.2	9.8	>49.2
1-V-2	4958I	894655	328.1	21	1	0	0	21	>328.1	>328.1	71.8
					2	0	0	21	>328.1	>328.1	71.8
					3	0	0	21	>328.1	>328.1	71.8
					4	0	0	21	>328.1	>328.1	71.8
					5	0	0	21	>328.1	>328.1	71.8
					6	0	0	21	>328.1	>328.1	71.8
					7	0	0	21	>328.1	>328.1	71.8
					8	0	0	21	>328.1	>328.1	71.8
					9	0	0	21	>328.1	>328.1	71.8
					10	0	0	21	>328.1	>328.1	71.8
					>10	21	21	21	71.8	71.8	71.8
1-V-3	4958I	874679	65.6	212	1	202	202	212	4.6	4.6	4.5
					2	10	212	10	20.8	4.5	20.8
					3	0	212	0	>65.6	4.5	>65.6
					4	0	212	0	>65.6	4.5	>65.6
					5	0	212	0	>65.6	4.5	>65.6
					6	0	212	0	>65.6	4.5	>65.6
					7	0	212	0	>65.6	4.5	>65.6
					8	0	212	0	>65.6	4.5	>65.6
					9	0	212	0	>65.6	4.5	>65.6
					10	0	212	0	>65.6	4.5	>65.6
					>10	0	212	0	>65.6	4.5	>65.6
1-V-5	4958I	873680	16.4	35	1	35	35	35	2.8	2.8	2.8
					2	0	35	0	>16.4	2.8	>16.4
					3	0	35	0	>16.4	2.8	>16.4
					4	0	35	0	>16.4	2.8	>16.4
					5	0	35	0	>16.4	2.8	>16.4
					6	0	35	0	>16.4	2.8	>16.4
					8	0	35	0	>16.4	2.8	>16.4
					9	0	35	0	>16.4	2.8	>16.4
					10	0	35	0	>16.4	2.8	>16.4
					>10	0	35	0	>16.4	2.8	>16.4
1-V-6	4958II	989446	32.8	33	1	26	26	33	6.4	6.4	5.7
					2	4	30	7	16.4	6.0	12.4
					3	2	32	3	23.2	5.8	19.0
					4	0	32	3	>32.8	5.8	32.8
					5	1	33	1	32.8	5.7	32.8
					6	0	33	1	>32.8	5.7	32.8
					7	0	33	1	>32.8	5.7	32.8
					8	0	33	1	>32.8	5.7	32.8
					9	0	33	1	>32.8	5.7	32.8
					10	0	33	1	>32.8	5.7	32.8
					>10	0	33	1	>32.8	5.7	32.8

(Continued)

* Effective diameter includes clumps of stems that have been converted to a single diameter stem.

Table A2 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams > Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams > Stated ESD
1-V-7	5098III	161364	16.4	1	1	31	31	31	2.9	2.9	2.9
					2	0	31	0	>16.4	2.9	>16.4
					3	0	31	0	>16.4	2.9	>16.4
					4	0	31	0	>16.4	2.9	>16.4
					5	0	31	0	>16.4	2.9	>16.4
					6	0	31	0	>16.4	2.9	>16.4
					7	0	31	0	>16.4	2.9	>16.4
					8	0	31	0	>16.4	2.9	>16.4
					9	0	31	0	>16.4	2.9	>16.4
					10	0	31	0	>16.4	2.9	>16.4
					>10	0	31	0	>16.4	2.9	>16.4
1-V-8	5057IV	252314	98.4	77	1	11	11	77	29.8	29.8	11.2
					2	34	45	66	16.9	14.7	12.1
					3	13	58	32	27.2	12.9	17.4
					4	15	73	19	25.4	11.5	22.9
					5	1	74	4	98.4	11.4	49.2
					6	3	77	3	56.8	11.2	56.8
					7	0	77	0	>98.4	11.2	>98.4
					8	0	77	0	>98.4	11.2	>98.4
					9	0	77	0	>98.4	11.2	>98.4
					10	0	77	0	>98.4	11.2	>98.4
					>10	0	77	0	>98.4	11.2	>98.4
1-V-9	5057IV	284319	98.4	211	1	76	86	211	10.6	10.6	6.7
					2	75	161	125	11.3	7.8	8.8
					3	5	166	50	44.0	7.6	13.9
					4	45	211	45	15.2	6.8	14.7
					5	0	211	0	>98.4	6.7	>98.4
					6	0	211	0	>98.4	6.7	>98.4
					7	0	211	0	>98.4	6.7	>98.4
					8	0	211	0	>98.4	6.7	>98.4
					9	0	211	0	>98.4	6.7	>98.4
					10	0	211	0	>98.4	6.7	>98.4
					>10	0	211	0	>98.4	6.7	>98.4
1-V-10	5057I	363286	32.8	52	1	33	33	52	5.7	5.7	4.7
					2	19	52	19	7.5	4.7	7.5
					3	0	52	0	>7.5	4.7	>7.5
					4	0	52	0	>7.5	4.7	>7.5
					5	0	52	0	>7.5	4.7	>7.5
					6	0	52	0	>7.5	4.7	>7.5
					7	0	52	0	>7.5	4.7	>7.5
					8	0	52	0	>7.5	4.7	>7.5
					9	0	52	0	>7.5	4.7	>7.5
					10	0	52	0	>7.5	4.7	>7.5
					>10	0	52	0	>7.5	4.7	>7.5
1-V-11	5057I	571219	32.8	58	1	27	27	58	6.4	6.4	4.3
					2	18	45	31	7.7	4.9	5.9
					3	5	50	13	14.7	4.6	9.1
					4	6	56	8	13.4	4.4	11.6
					5	0	56	2	>32.8	4.4	23.2
					6	0	56	2	>32.8	4.4	23.2
					7	1	57	2	>32.8	4.3	23.2
					8	0	57	1	>32.8	4.3	>32.8
					9	0	57	1	>32.8	4.3	>32.8
					10	1	58	1	>32.8	4.3	>32.8
					>10	0	58	0	>32.8	4.3	>32.8
1-V-12	5057IV	211305	49.2	30	1	7	7	30	18.6	18.6	9.1
					2	9	16	23	16.4	12.3	10.2
					3	4	20	14	24.6	11.0	13.2
					4	9	29	10	16.4	9.9	15.6
					5	1	30	1	49.2	9.1	49.2
					6	0	30	0	>49.2	9.1	>49.2
					7	0	30	0	>49.2	9.1	>49.2
					8	0	30	0	>49.2	9.1	>49.2
					9	0	30	0	>49.2	9.1	>49.2
					10	0	30	0	>49.2	9.1	>49.2
					>10	0	30	0	>49.2	9.1	>49.2
1-V-13	5057IV	212306	26.2	63	1	62	62	63	3.3	3.3	3.3
					2	0	62	1	>26.2	3.3	>26.2
					3	0	62	1	>26.2	3.3	>26.2
					4	0	62	1	>26.2	3.3	>26.2
					5	0	62	1	>26.2	3.3	>26.2
					6	1	63	1	26.2	3.3	26.2
					7	0	63	0	>26.2	3.3	>26.2
					8	0	63	0	>26.2	3.3	>26.2
					9	0	63	0	>26.2	3.3	>26.2
					10	0	63	0	>26.2	3.3	>26.2
					>10	0	63	0	>26.2	3.3	>26.2

(Continued)

(2 of 6 sheets)

Table A6 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	RPT-Tree Stem Diameter (RSD) in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated RSD	Cumulative Stem Count for Diams ≥ Stated RSD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated RSD	Stem Spacing, ft, for Diams ≥ Stated RSD
1-V-14	505/IV	210156	19.7	22	1	18	18	22	4.6	4.6	4.2
					2	4	22	4	9.8	4.2	9.8
					3	0	22	0	>19.7	4.2	>19.7
					4	0	22	0	>19.7	4.2	>19.7
					5	0	22	0	>19.7	4.2	>19.7
					6	0	22	0	>19.7	4.2	>19.7
					7	0	22	0	>19.7	4.2	>19.7
					8	0	22	0	>19.7	4.2	>19.7
					9	0	22	0	>19.7	4.2	>19.7
					10	0	22	0	>19.7	4.2	>19.7
					>10	0	22	0	>19.7	4.2	>19.7
1-V-15	505/IV	213157	19.7	31	1	26	26	31	3.8	3.8	3.5
					2	5	31	5	8.8	3.5	8.8
					3	0	31	0	>19.7	3.5	>19.7
					4	0	31	0	>19.7	3.5	>19.7
					5	0	31	0	>19.7	3.5	>19.7
					6	0	31	0	>19.7	3.5	>19.7
					7	0	31	0	>19.7	3.5	>19.7
					8	0	31	0	>19.7	3.5	>19.7
					9	0	31	0	>19.7	3.5	>19.7
					10	0	31	0	>19.7	3.5	>19.7
					>10	0	31	0	>19.7	3.5	>19.7
1-V-16	505/II	19[illegible]30	6.6	1	1	1	1	1	6.6	6.6	6.6
					2	0	1	0	>6.6	6.6	>6.6
					3	0	1	0	>6.6	6.6	>6.6
					4	0	1	0	>6.6	6.6	>6.6
					5	0	1	0	>6.6	6.6	>6.6
					6	0	1	0	>6.6	6.6	>6.6
					7	0	1	0	>6.6	6.6	>6.6
					8	0	1	0	>6.6	6.6	>6.6
					9	0	1	0	>6.6	6.6	>6.6
					10	0	1	0	>6.6	6.6	>6.6
					>10	0	1	0	>6.6	6.6	>6.6
1-V-17	505/IV	213[illegible]39	68.4	181	1	113	113	181	9.2	9.2	7.3
					2	50	163	68	14.9	7.7	11.9
					3	11	174	18	24.6	7.5	24.2
					4	5	179	7	44.0	7.4	37.2
					5	1	180	2	68.4	7.3	69.5
					6	0	180	0	>68.4	7.3	>68.4
					7	0	180	0	>68.4	7.3	>68.4
					8	0	180	0	>68.4	7.3	>68.4
					9	1	181	1	68.4	7.3	68.4
					10	0	181	0	>68.4	7.3	>68.4
					>10	0	181	0	>68.4	7.3	>68.4
1-V-18	505/IV	202242	49.2	163	1	152	152	163	4.0	4.0	3.9
					2	8	160	11	17.5	3.9	14.9
					3	2	162	3	34.8	3.9	28.4
					4	0	162	1	>49.2	3.9	49.2
					5	0	162	1	>49.2	3.9	49.2
					6	1	163	1	49.2	3.9	49.2
					7	0	163	0	>49.2	3.9	>49.2
					8	0	163	0	>49.2	3.9	>49.2
					9	0	163	0	>49.2	3.9	>49.2
					10	0	163	0	>49.2	3.9	>49.2
					>10	0	163	0	>49.2	3.9	>49.2
1-V-19	4998I	847671	32.8	64	1	34	34	64	5.6	5.6	4.1
					2	21	55	30	7.2	4.4	6.0
					3	4	59	9	16.4	4.3	10.9
					4	0	59	5	>32.8	4.3	14.7
					5	1	60	5	32.8	4.2	14.7
					6	2	62	4	23.2	4.2	16.4
					7	0	62	2	>32.8	4.2	23.2
					8	0	62	2	>32.8	4.2	23.2
					9	0	62	2	>32.8	4.2	23.2
					10	0	62	2	>32.8	4.2	23.2
					>10	2	64	2	23.2	4.1	23.2
1-V-21	505/IV	168258	65.6	17	1	0	0	17	>65.6	>65.6	15.9
					2	0	0	17	>65.6	>65.6	15.9
					3	0	0	17	>65.6	>65.6	15.9
					4	0	0	17	>65.6	>65.6	15.9
					5	0	0	17	>65.6	>65.6	15.9
					6	0	0	17	>65.6	>65.6	15.9
					7	0	0	17	>65.6	>65.6	15.9
					8	0	0	17	>65.6	>65.6	15.9
					9	0	0	17	>65.6	>65.6	15.9
					10	0	0	17	>65.6	>65.6	15.9
					>10	17	17	17	15.9	15.9	15.9

(Continued)

Tabel A2 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter Ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing Ft	Stem Spacing, Ft, for Diams ≤ Stated ESD	Stem Spacing, Ft, for Diams ≥ Stated ESD
1-V-22	5057IV	166276	65.6	57	1	15	15	57	17.0	17.0	8.7
					2	0	15	42	>65.6	17.0	10.1
					3	0	15	42	>65.6	17.0	10.1
					4	0	15	42	>65.6	17.0	10.1
					5	2	17	40	46.4	15.9	10.1
					6	1	18	40	65.6	15.5	10.4
					7	3	21	39	38.0	14.3	10.5
					8	3	24	36	38.0	13.4	11.0
					9	4	28	33	32.8	12.4	11.5
					10	7	35	29	26.8	11.1	12.0
					>10	22	57	22	14.0	8.7	14.0
1-V-23	5057IV	178284	196.8	530	1	94	94	530	20.8	20.8	8.9
					2	94	108	476	20.8	19.0	9.0
					3	63	171	422	24.8	15.0	9.6
					4	63	234	359	24.8	12.9	10.4
					5	90	324	296	20.8	10.9	11.4
					6	99	423	206	19.8	9.5	13.7
					7	72	495	107	24.2	8.8	19.0
					8	0	495	35	>196.8	8.4	33.8
					9	1	496	35	196.8	8.4	33.8
					10	0	496	34	>196.8	8.4	33.8
					>10	34	530	34	33.8	8.9	33.8
1-V-24	5058III	182329	19.7	22	1	12	12	22	5.7	5.7	4.2
					2	10	22	10	6.2	4.2	6.2
					3	0	22	0	>19.7	4.2	>19.7
					4	0	22	0	>19.7	4.2	>19.7
					5	0	22	0	>19.7	4.2	>19.7
					6	0	22	0	>19.7	4.2	>19.7
					7	0	22	0	>19.7	4.2	>19.7
					8	0	22	0	>19.7	4.2	>19.7
					9	0	22	0	>19.7	4.2	>19.7
					10	0	22	0	>19.7	4.2	>19.7
					>10	0	22	0	>19.7	4.2	>19.7
1-V-26	5058III	205363	32.8	16	1	15	15	16	8.5	8.5	8.2
					2	1	16	1	32.8	8.2	32.8
					3	0	16	0	>32.8	8.2	>32.8
					4	0	16	0	>32.8	8.2	>32.8
					5	0	16	0	>32.8	8.2	>32.8
					6	0	16	0	>32.8	8.2	>32.8
					7	0	16	0	>32.8	8.2	>32.8
					8	0	16	0	>32.8	8.2	>32.8
					9	0	16	0	>32.8	8.2	>32.8
					10	0	16	0	>32.8	8.2	>32.8
					>10	0	16	0	>32.8	8.2	>32.8
1-V-27	5058III	170361	16.4	10	1	10	10	10	5.2	5.2	5.2
					2	0	10	0	>16.4	5.2	>16.4
					3	0	10	0	>16.4	5.2	>16.4
					4	0	10	0	>16.4	5.2	>16.4
					5	0	10	0	>16.4	5.2	>16.4
					6	0	10	0	>16.4	5.2	>16.4
					7	0	10	0	>16.4	5.2	>16.4
					8	0	10	0	>16.4	5.2	>16.4
					9	0	10	0	>16.4	5.2	>16.4
					10	0	10	0	>16.4	5.2	>16.4
					>10	0	10	0	>16.4	5.2	>16.4
1-V-28	5058III	171362	16.4	11	1	11	11	11	5.0	5.0	5.0
					2	0	11	0	>16.4	5.0	>16.4
					3	0	11	0	>16.4	5.0	>16.4
					4	0	11	0	>16.4	5.0	>16.4
					5	0	11	0	>16.4	5.0	>16.4
					6	0	11	0	>16.4	5.0	>16.4
					7	0	11	0	>16.4	5.0	>16.4
					8	0	11	0	>16.4	5.0	>16.4
					9	0	11	0	>16.4	5.0	>16.4
					10	0	11	0	>16.4	5.0	>16.4
					>10	0	11	0	>16.4	5.0	>16.4
1-V-29	5058III	212384	78.8	14	1	10	10	14	25.2	25.2	21.0
					2	3	13	4	45.3	21.0	19.4
					3	1	14	1	78.8	21.0	78.8
					4	0	14	0	>78.8	21.0	>78.8
					5	0	14	0	>78.8	21.0	>78.8
					6	0	14	0	>78.8	21.0	>78.8
					7	0	14	0	>78.8	21.0	>78.8
					8	0	14	0	>78.8	21.0	>78.8
					9	0	14	0	>78.8	21.0	>78.8
					10	0	14	0	>78.8	21.0	>78.8
					>10	0	14	0	>78.8	21.0	>78.8

(Continued)

(4 of 4 sheets)

Table A8 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams > Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams > Stated ESD
1-V-30	5057IV	212215	13.1	24	1	24	24	24	2.7	2.7	2.7
					2	0	24	0	>13.1	2.7	>13.1
					3	0	24	0	>13.1	2.7	>13.1
					4	0	24	0	>13.1	2.7	>13.1
					5	0	24	0	>13.1	2.7	>13.1
					6	0	24	0	>13.1	2.7	>13.1
					7	0	24	0	>13.1	2.7	>13.1
					8	0	24	0	>13.1	2.7	>13.1
					9	0	24	0	>13.1	2.7	>13.1
					10	0	24	0	>13.1	2.7	>13.1
					>10	0	24	0	>13.1	2.7	>13.1
1-V-35	5057IV	215180	98.4	39	1	13	13	39	27.2	27.2	15.8
					2	12	25	26	28.4	19.7	19.3
					3	6	31	14	40.1	17.6	26.2
					4	2	33	8	69.5	17.1	34.8
					5	0	33	6	>98.4	17.1	40.1
					6	0	33	6	>98.4	17.1	40.1
					7	0	33	6	>98.4	17.1	40.1
					8	0	33	6	>98.4	17.1	40.1
					9	2	35	6	69.5	16.6	40.1
					10	1	36	4	98.4	16.4	49.2
					>10	3	39	3	56.8	15.6	56.8
1-V-37	5058III	223332	49.2	34	1	25	25	34	9.8	9.8	8.5
					2	7	32	9	18.6	8.7	16.4
					3	1	33	2	49.2	8.6	34.8
					4	1	34	1	49.2	8.5	49.2
					5	0	34	0	>49.2	8.5	>49.2
					6	0	34	0	>49.2	8.5	>49.2
					7	0	34	0	>49.2	8.5	>49.2
					8	0	34	0	>49.2	8.5	>49.2
					9	0	34	0	>49.2	8.5	>49.2
					10	0	34	0	>49.2	8.5	>49.2
					>10	0	34	0	>49.2	8.5	>49.2
1-V-38	5058III	211339	82.0	65	1	18	18	65	19.4	19.4	10.2
					2	13	31	47	22.8	14.7	11.9
					3	3	34	34	47.4	14.1	14.1
					4	5	39	31	36.8	13.1	14.7
					5	5	44	26	36.8	12.4	16.1
					6	5	49	21	36.8	11.7	17.9
					7	7	56	16	31.0	11.0	20.5
					8	3	59	9	47.4	10.7	27.3
					9	1	60	6	82.0	10.6	33.7
					10	0	60	5	>82.0	10.6	36.8
					>10	5	65	0	36.8	10.2	36.8
1-V-39	5057IV	213301	32.8	23	1	10	10	23	10.4	10.4	6.8
					2	13	23	13	9.1	6.8	9.1
					3	0	23	0	>32.8	6.8	>32.8
					4	0	23	0	>32.8	6.8	>32.8
					5	0	23	0	>32.8	6.8	>32.8
					6	0	23	0	>32.8	6.8	>32.8
					7	0	23	0	>32.8	6.8	>32.8
					8	0	23	0	>32.8	6.8	>32.8
					9	0	23	0	>32.8	6.8	>32.8
					10	0	23	0	>32.8	6.8	>32.8
					>10	0	23	0	>32.8	6.8	>32.8
1-V-41	5057IV	212296	32.8	24	1	22	22	24	7.0	7.0	6.7
					2	2	24	2	23.2	6.7	23.2
					3	0	24	0	>32.8	6.7	>32.8
					4	0	24	0	>32.8	6.7	>32.8
					5	0	24	0	>32.8	6.7	>32.8
					6	0	24	0	>32.8	6.7	>32.8
					7	0	24	0	>32.8	6.7	>32.8
					8	0	24	0	>32.8	6.7	>32.8
					9	0	24	0	>32.8	6.7	>32.8
					10	0	24	0	>32.8	6.7	>32.8
					>10	0	24	0	>32.8	6.7	>32.8
1-V-42	5057IV	223265	65.6	57	1	22	22	57	14.0	14.0	8.7
					2	25	47	35	13.1	9.6	11.1
					3	8	55	10	23.1	8.9	20.8
					4	2	57	2	46.4	8.7	46.4
					5	0	57	0	>65.6	8.7	>65.6
					6	0	57	0	>65.6	8.7	>65.6
					7	0	57	0	>65.6	8.7	>65.6
					8	0	57	0	>65.6	8.7	>65.6
					9	0	57	0	>65.6	8.7	>65.6
					10	0	57	0	>65.6	8.7	>65.6
					>10	0	57	0	>65.6	8.7	>65.6

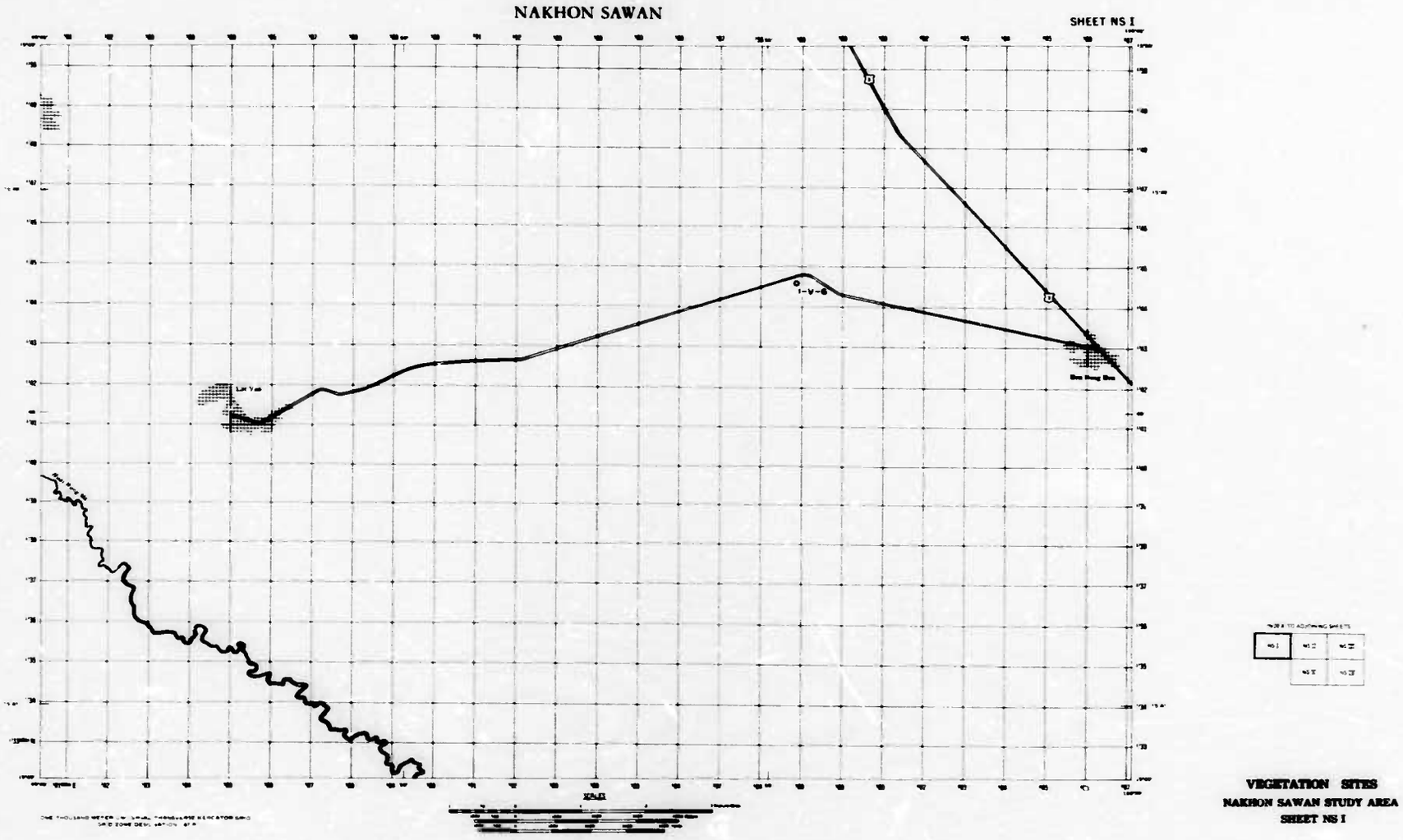
(Continued)

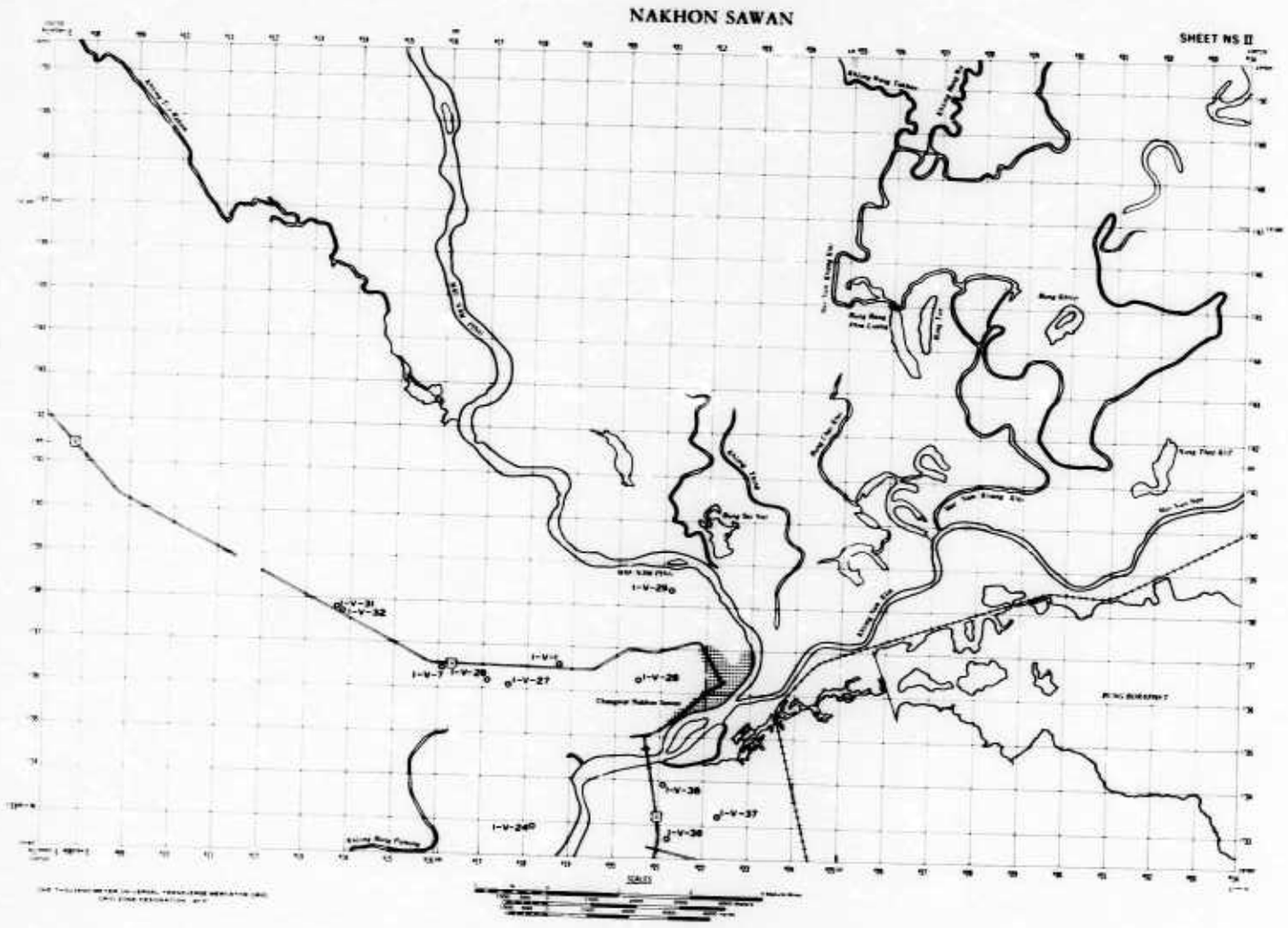
Table A1 (Concluded)

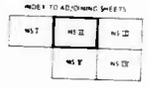
Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
1-V-43	5057IV	224267	98.4	64	1	25	25	64	19.7	19.7	12.3
					2	16	41	39	24.6	15.3	15.8
					3	16	57	23	24.6	13.0	20.5
					4	5	62	7	44.0	12.5	37.2
					5	2	64	2	69.5	12.3	69.5
					6	0	64	0	>98.4	12.3	>98.4
					7	0	64	0	>98.4	12.3	>98.4
					8	0	64	0	>98.4	12.3	>98.4
					9	0	64	0	>98.4	12.3	>98.4
					10	0	64	0	>98.4	12.3	>98.4
					>10	0	64	0	>98.4	12.3	>98.4
1-V-45	4958I	852677	39.4	51	1	22	22	51	8.4	8.4	5.5
					2	19	41	29	9.0	6.2	7.3
					3	5	46	10	17.6	5.8	12.5
					4	4	50	5	19.7	5.6	17.6
					5	0	50	1	>39.4	5.6	39.4
					6	0	50	1	>39.4	5.6	39.4
					7	0	50	1	>39.4	5.6	39.4
					8	0	50	1	>39.4	5.6	39.4
					9	0	50	1	>39.4	5.6	39.4
					10	0	50	1	>39.4	5.6	39.4
					>10	1	51	1	39.4	5.5	39.4

(6 of 6 sheets)

FIG. A1


NAKHON SAWAN
SHEET NS I
VEGETATION SITES
NAKHON SAWAN STUDY AREA
SHEET NS I



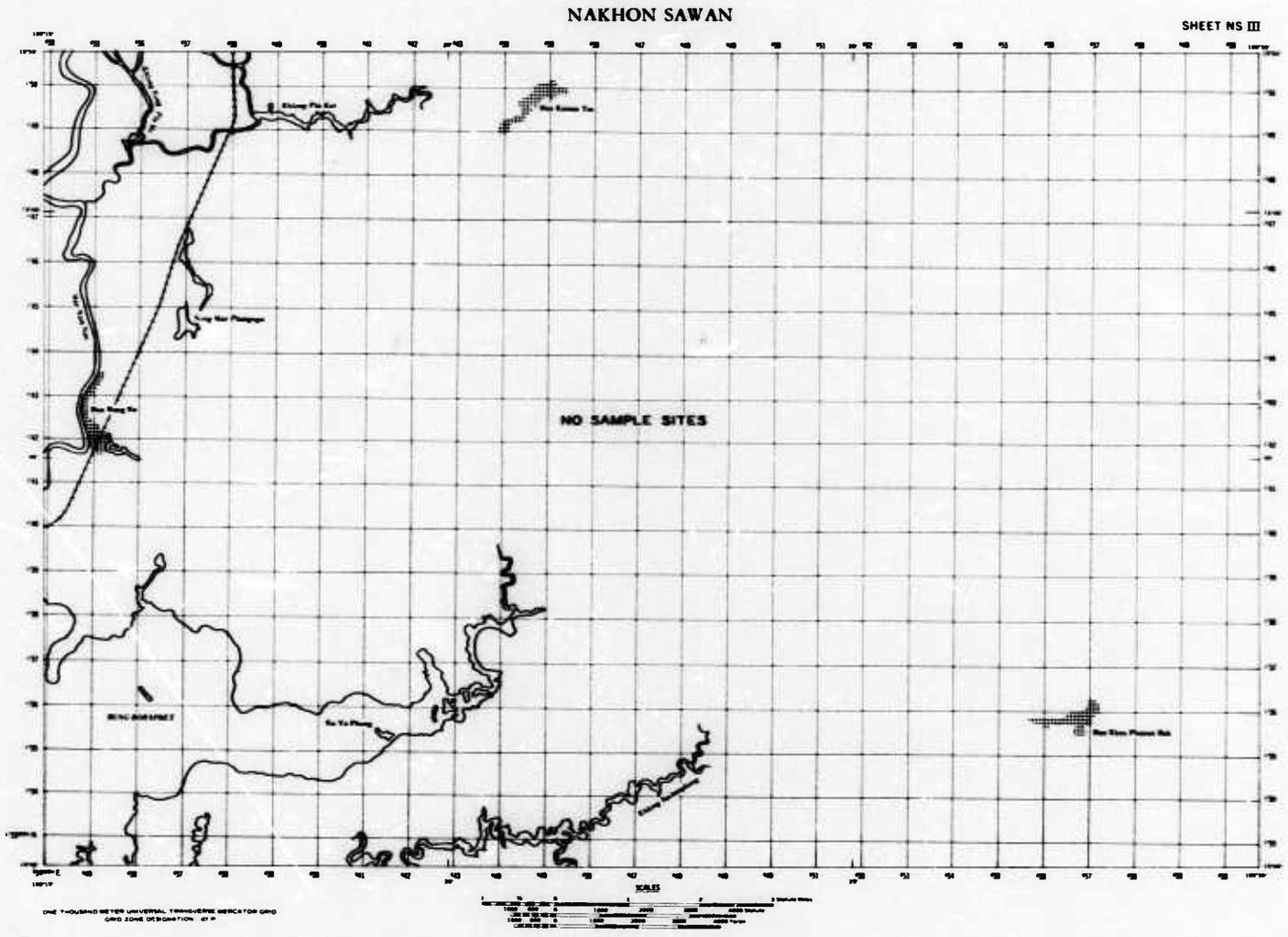


VEGETATION SITES
NAKHON SAWAN STUDY AREA
SHEET NS II

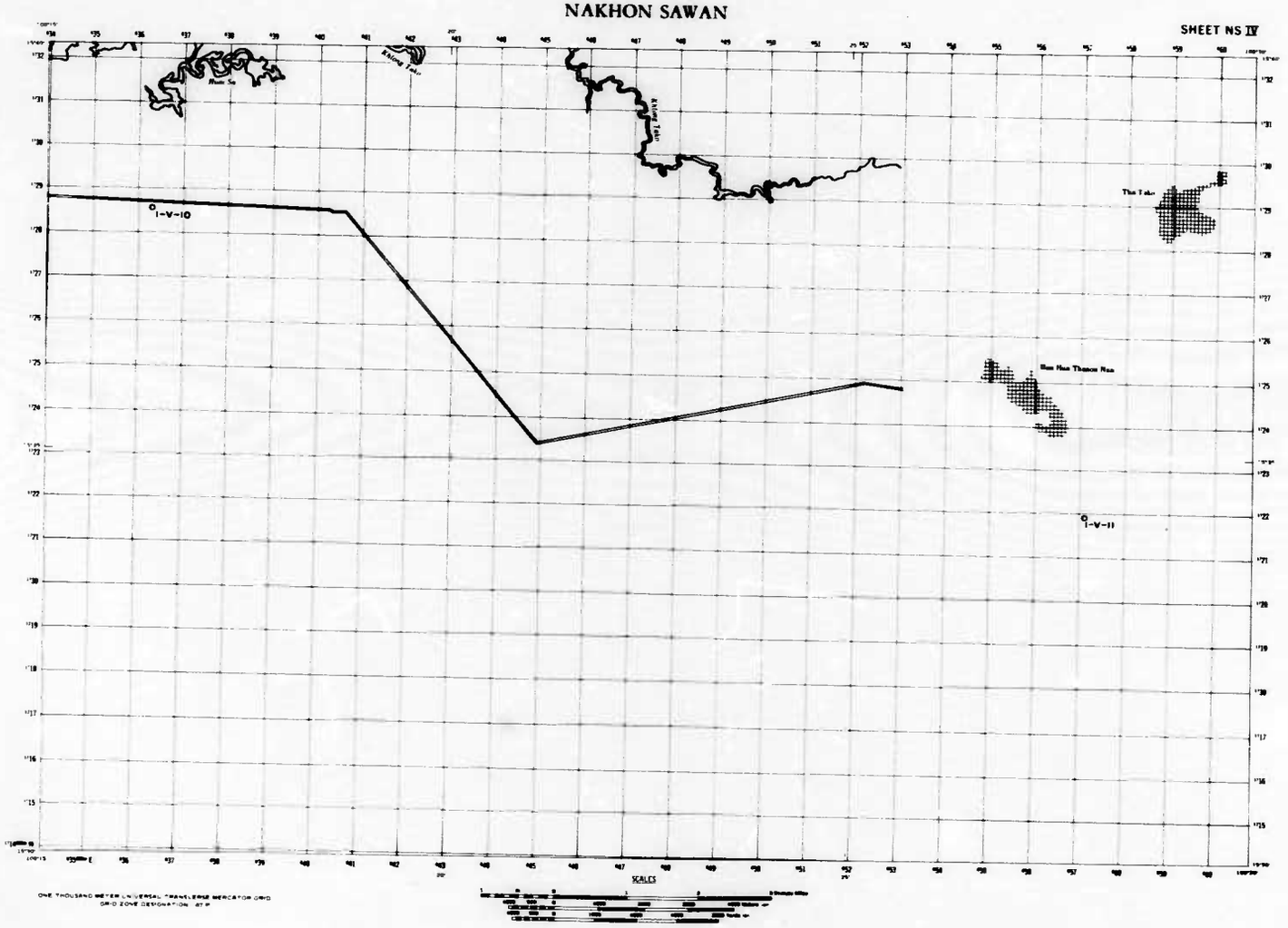
A11

FIG. A2

FIG. A3



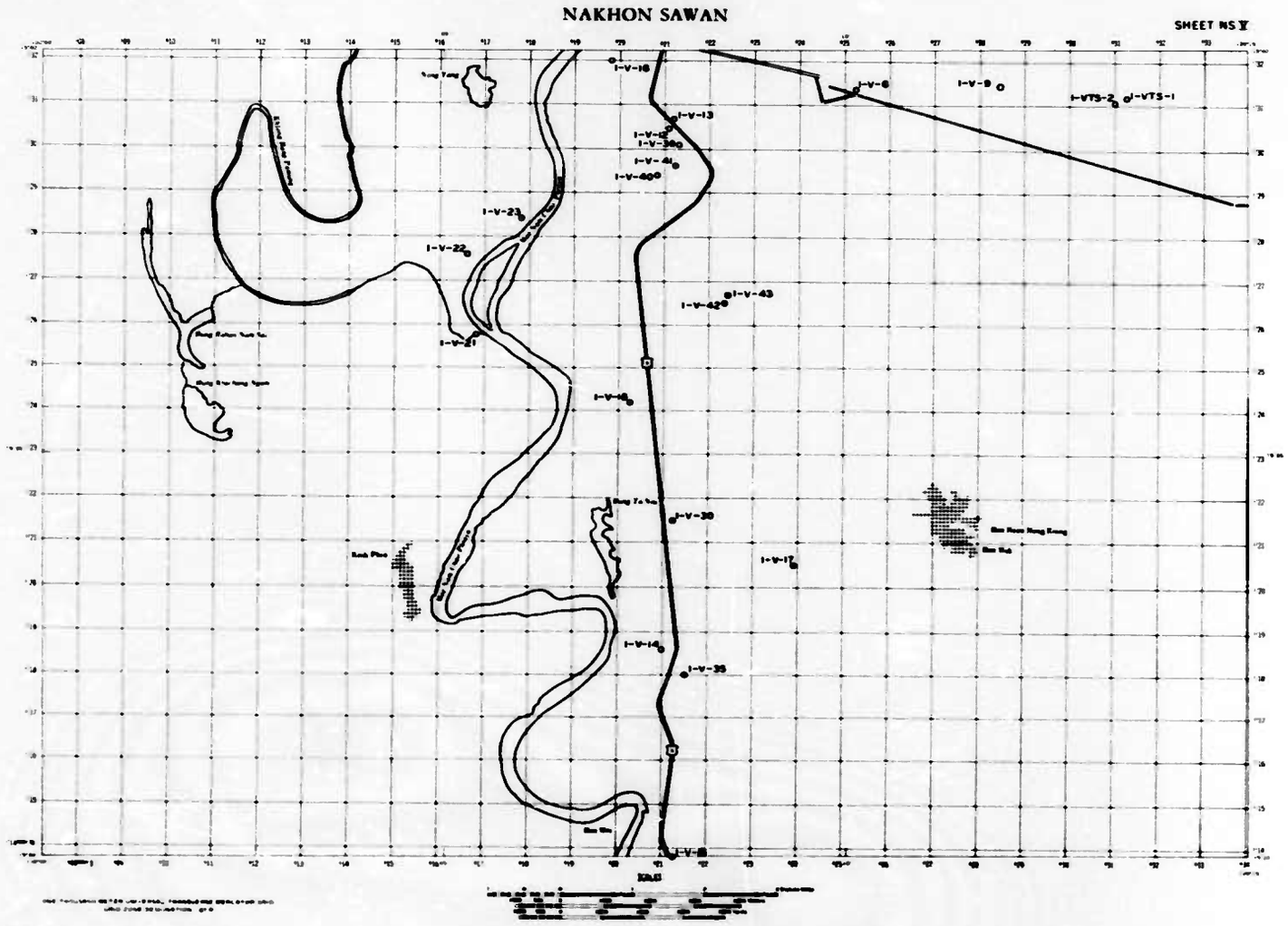
VEGETATION SITES
NAKHON SAWAN STUDY AREA
SHEET NS III



VEGETATION SITES
NAKHON SAWAN STUDY AREA
SHEET NS IV

FIG. A4

FIG. A5



VEGETATION SITES
NAKHON SAWAN STUDY AREA
SHEET NS V

LOP BURI STUDY AREA

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Table A3

Vegetation Site Summation

Lop Buri

Site No.	Location: Map Sheet*	Location: Grid Coordinates	Fig. No.	Date Sampled
2-V-1	5154II	117964	A9	19 Jan 1965
2-V-3	5154II	122972	A9	19 Jan 1965
2-V-4A	5154II	072928	A10	21 Jan 1965
2-V-6	5154II	937921	A10	25 Jan 1965
2-V-10	5154III	663993	**	7 Feb 1965
2-V-10A	5154III	665992	**	24 Jan 1965
2-V-11	5154III	801884	A11	24 Jan 1965
2-V-12	5154I	079066	A9	21 Jan 1965
2-V-20	5155II	032228	A8	28 Jan 1965
2-V-21	5155II	021237	A8	22 Jan 1965
2-V-23	5155II	026246	A8	10 Feb 1965
2-V-24	5155II	021255	A8†	10 Feb 1965
2-V-25	5155II	002266	A8	10 Feb 1965
2-V-26	5155II	993287	A8†	9 Feb 1965
2-V-31	5155II	943358	**	6 Feb 1965
2-V-32	5155II	932371	**	6 Feb 1965
2-V-33	5155II	915378	**	27 Jan 1965
2-V-34	5155II	035226	A8	26 Jan 1965
2-V-36	5155II	115260	A8†	26 Jan 1965
2-V-39	5155II	981226	A8	27 Jan 1965
2-V-41	5155II	943275	A8	8 Feb 1965
2-V-42	5155II	934270	A8	8 Feb 1965
2-V-44	5154I	041218	A8	22 Jan 1965
2-V-45	5154I	077206	A8	22 Jan 1965
2-V-46	5155II	986263	A8	9 Feb 1965
2-V-47	5155IV	762455	A6	4 Feb 1965
2-V-49	5154I	053213	A8	21 Jan 1965
2-V-50	5155III	791374	A7	23 Jan 1965
2-V-52	5155III	631380	A7	23 Jan 1965
2-V-54	5155IV	736473	A6	4 Feb 1965
2-V-55	5155IV	758479	A6	4 Feb 1965
2-V-56	5154II	110999	A9	20 Jan 1965
2-V-57	5154II	109985	A9	20 Jan 1965
2-V-59	5155IV	837497	A6	5 Feb 1965
2-V-60	5155IV	856492	A6	5 Feb 1965

Note: Missing site numbers are the result of sites having been preselected and numbered but not sampled. Grid coordinates are set up according to Military Grid System; the first three numbers represent longitude, and the second three numbers represent latitude.

* AMS, L708, 1:50,000.

** Site outside figure limits.

† All stems <1 in.

Table A4

Summary of Vegetation Field Data

Lop Buri

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter* (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
2-V-1	5154II	117964	32.8	26	1	1	1	26	32.8	32.8	6.5
					2	0	1	25	>32.8	32.8	6.6
					3	4	5	25	16.4	10.3	6.6
					4	14	19	21	8.3	7.6	7.2
					5	3	22	7	13.2	7.0	12.4
					6	3	25	4	13.2	6.6	16.4
					7	1	26	1	32.8	6.5	32.8
					8	0	26	0	>32.8	6.5	>32.8
					9	0	26	0	>32.8	6.5	>32.8
					10	0	26	0	>32.8	6.5	>32.8
					>10	0	26	0	>32.8	6.5	>32.8
2-V-3	5154II	122972	32.8	80	1	38	38	80	5.4	5.4	3.7
					2	18	56	42	7.8	4.4	5.1
					3	7	63	24	12.4	4.1	6.7
					4	9	72	17	10.9	3.9	8.0
					5	6	78	8	13.4	3.7	11.6
					6	1	79	2	32.8	3.7	23.2
					7	1	80	1	32.8	3.7	32.8
					8	0	80	0	>32.8	3.7	>32.8
					9	0	80	0	>32.8	3.7	>32.8
					10	0	80	0	>32.8	3.7	>32.8
					>10	0	80	0	>32.8	3.7	>32.8
2-V-4A	5154II	072928	78.8	126	1	10	10	126	24.9	24.9	7.0
					2	15	25	116	20.3	15.8	7.3
					3	26	51	101	15.5	11.0	7.8
					4	43	94	75	12.0	8.1	9.1
					5	5	99	32	35.3	7.9	13.9
					6	19	118	27	18.1	7.3	15.2
					7	2	120	8	55.6	7.2	27.8
					8	2	122	6	55.6	7.1	32.1
					9	4	126	4	39.4	7.0	39.4
					10	0	126	0	>78.8	7.0	>78.8
					>10	0	126	0	>78.8	7.0	>78.8
2-V-6	5154II	937921	98.4	27	1	0	0	27	>98.4	>98.4	19.0
					2	0	0	27	>98.4	>98.4	19.0
					3	0	0	27	>98.4	>98.4	19.0
					4	0	0	27	>98.4	>98.4	19.0
					5	0	0	27	>98.4	>98.4	19.0
					6	0	0	27	>98.4	>98.4	19.0
					7	1	1	27	98.4	98.4	19.0
					8	0	1	26	>98.4	98.4	19.3
					9	5	6	26	44.0	40.1	19.3
					10	3	9	21	56.8	32.8	21.5
					>10	18	27	18	23.2	19.0	23.2
2-V-10	5154III	663993	65.6	59	1	5	5	59	29.4	29.4	8.6
					2	10	15	54	20.8	17.0	9.0
					3	5	20	44	29.4	14.7	9.9
					4	5	25	39	29.4	13.1	10.5
					5	8	33	34	23.2	11.4	11.3
					6	5	38	26	29.4	10.6	12.6
					7	2	40	21	46.5	10.4	14.3
					8	0	40	19	>65.6	10.4	15.0
					9	1	41	19	65.6	10.2	15.0
					10	2	43	18	46.5	10.0	15.5
					>10	16	59	16	16.4	8.6	16.4
2-V-10A	5154III	665992	49.2	77	1	5	5	77	22.0	22.0	5.6
					2	27	32	72	9.5	8.7	5.8
					3	4	36	45	24.6	8.2	7.3
					4	18	54	41	11.6	6.7	7.7
					5	10	64	23	15.6	6.2	10.3
					6	10	74	13	15.6	5.7	13.7
					7	1	75	3	49.2	5.7	28.4
					8	0	75	2	>49.2	5.7	34.8
					9	2	77	2	34.8	5.6	34.8
					10	0	75	0	>49.2	5.6	>49.2
					>10	0	75	0	>49.2	5.6	>49.2
2-V-11	5154III	801884	65.6	37	1	0	0	37	>65.6	>65.6	10.8
					2	3	3	37	38.0	38.0	10.8
					3	6	9	34	26.8	21.8	11.3
					4	5	14	28	29.4	17.5	12.4
					5	7	21	23	24.8	14.3	13.7
					6	12	33	16	19.0	11.4	16.4
					7	0	33	4	>65.6	11.4	32.8
					8	0	33	4	>65.6	11.4	32.8
					9	0	33	4	>65.6	11.4	32.8
					10	0	33	4	>65.6	11.4	32.8
					>10	4	37	4	32.8	10.8	32.8

(Continued)

* Effective diameter includes clumps of stems that have been converted to a single diameter stem.

Table A4 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
2-V-12	5154I	079066	39.4	28	1	3	3	28	22.8	22.8	7.5
					2	11	14	25	11.9	10.5	7.9
					3	12	26	14	11.1	7.8	10.5
					4	2	28	2	27.8	7.5	27.8
					5	0	28	0	>39.4	7.5	>39.4
					6	0	28	0	>39.4	7.5	>39.4
					7	0	28	0	>39.4	7.5	>39.4
					8	0	28	0	>39.4	7.5	>39.4
					9	0	28	0	>39.4	7.5	>39.4
					10	0	28	0	>39.4	7.5	>39.4
					>10	0	28	0	>39.4	7.5	>39.4
2-V-20	5155II	032228	98.4	37	1	0	0	37	>98.4	>98.4	16.2
					2	0	0	37	>98.4	>98.4	16.2
					3	0	0	37	>98.4	>98.4	16.2
					4	0	0	37	>98.4	>98.4	16.2
					5	0	0	37	>98.4	>98.4	16.2
					6	0	0	37	>98.4	>98.4	16.2
					7	6	6	37	40.1	40.1	16.2
					8	6	12	31	40.1	28.4	17.6
					9	6	18	25	40.1	23.2	19.7
					10	4	22	19	49.2	21.0	22.5
					>10	15	37	15	25.4	16.2	25.4
2-V-21	5155II	021237	49.2	23	1	0	0	23	>49.2	>49.2	10.3
					2	0	0	23	>49.2	>49.2	10.3
					3	0	0	23	>49.2	>49.2	10.3
					4	1	1	23	49.2	49.2	10.3
					5	3	4	22	28.4	24.6	10.5
					6	5	9	19	22.0	16.4	11.3
					7	9	18	14	16.4	11.6	14.2
					8	3	21	5	28.4	10.7	28.0
					9	2	23	2	4.8	10.3	4.8
					10	0	23	0	>49.2	10.3	>49.2
					>10	0	23	0	>49.2	10.3	>49.2
2-V-23	5155II	026246	39.4	35	1	4	4	35	19.7	19.7	6.7
					2	24	28	31	8.1	7.3	7.1
					3	5	33	7	17.6	6.9	14.9
					4	1	34	2	39.4	6.8	27.6
					5	0	34	1	>39.4	6.8	39.4
					6	0	34	1	>39.4	6.8	39.4
					7	0	34	1	>39.4	6.8	39.4
					8	0	34	1	>39.4	6.8	39.4
					9	0	34	1	>39.4	6.8	39.4
					10	0	34	1	>39.4	6.8	39.4
					>10	1	35	1	39.4	6.7	39.4
2-V-25	5155II	002266	19.7	19	1	7	7	19	7.4	7.4	4.9
					2	12	19	12	5.7	4.5	36.8
					3	0	19	0	>19.7	4.5	>19.7
					4	0	19	0	>19.7	4.5	>19.7
					5	0	19	0	>19.7	4.5	>19.7
					6	0	19	0	>19.7	4.5	>19.7
					7	0	19	0	>19.7	4.5	>19.7
					8	0	19	0	>19.7	4.5	>19.7
					9	0	19	0	>19.7	4.5	>19.7
					10	0	19	0	>19.7	4.5	>19.7
					>10	0	19	0	>19.7	4.5	>19.7
2-V-31	5155II	943358	39.4	26	1	0	0	26	>39.4	>39.4	7.8
					2	1	1	26	39.4	39.4	7.8
					3	8	9	25	13.9	13.1	7.9
					4	12	21	17	11.4	8.6	9.6
					5	3	24	5	22.8	8.1	17.6
					6	1	25	2	39.4	7.9	27.8
					7	1	26	1	39.4	7.8	39.4
					8	0	26	0	>39.4	7.8	>39.4
					9	0	26	0	>39.4	7.8	>39.4
					10	0	26	0	>39.4	7.8	>39.4
					>10	0	26	0	>39.4	7.8	>39.4
2-V-32	5155II	932371	32.8	21	1	1	1	21	32.8	32.8	7.2
					2	5	6	20	14.7	13.4	7.3
					3	8	14	15	11.6	8.8	8.5
					4	4	18	7	16.4	7.8	12.4
					5	0	18	3	>16.4	7.8	18.9
					6	2	20	3	23.2	7.3	18.9
					7	0	20	1	>16.4	7.3	32.8
					8	1	21	1	32.8	7.2	32.8
					9	0	21	0	>16.4	7.2	>32.8
					10	0	21	0	>16.4	7.2	>32.8
					>10	0	21	0	>16.4	7.2	>32.8

(Continued)

Table A4 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
2-V-33	5155II	915378	49.2	27	1	10	10	27	15.6	15.6	9.5
					2	14	24	17	13.1	10.0	11.9
					3	1	25	3	49.2	9.8	28.4
					4	2		2	34.8	9.5	34.8
					5	0		0	>49.2	9.5	>49.2
					6	0	27	0	>49.2	9.5	>49.2
					7	0	27	0	>49.2	9.5	>49.2
					8	0	27	0	>49.2	9.5	>49.2
					9	0	27	0	>49.2	9.5	>49.2
					10	0	27	0	>49.2	9.5	>49.2
					>10	0	27	0	>49.2	9.5	>49.2
2-V-34	5155II	035226	196.8	49	1	0	0	49	>196.8	>196.8	28.1
					2	0	0	49	>196.8	>196.8	28.1
					3	0	0	49	>196.8	>196.8	28.1
					4	0	0	49	>196.8	>196.8	28.1
					5	1	1	49	196.8	196.8	28.1
					6	4	5	48	98.4	88.1	28.4
					7	2	7	44	139.0	74.4	29.7
					8	3	10	42	113.7	62.2	30.3
					9	3	13	39	113.7	54.5	31.6
					10	1	14	36	196.8	52.5	32.8
					>10	35	49	35	33.2	28.1	33.2
2-V-39	5155II	981226	196.8	23,424	1	23,400	23,400	23,424	1.3	1.3	1.3
					2	0	23,400	24	>196.8	1.3	40.1
					3	0	23,400	24	>196.8	1.3	40.1
					4	0	23,400	24	>196.8	1.3	40.1
					5	0	23,400	24	>196.8	1.3	40.1
					6	0	23,400	24	>196.8	1.3	40.1
					7	0	23,400	24	>196.8	1.3	40.1
					8	0	23,400	24	>196.8	1.3	40.1
					9	0	23,400	24	>196.8	1.3	40.1
					10	0	23,400	24	>196.8	1.3	40.1
					>10	24	23,424	24	40.1	1.3	40.1
2-V-41	5155II	943275	26.2	35	1	26	26	35	5.1	5.1	4.4
					2	6	32	9	10.7	4.6	8.7
					3	0	32	3	>26.2	4.6	15.1
					4	3	35	3	15.1	4.4	15.1
					5	0	35	0	26.2	4.4	>26.2
					6	0	35	0	26.2	4.4	>26.2
					7	0	35	0	26.2	4.4	>26.2
					8	0	35	0	26.2	4.4	>26.2
					9	0	35	0	26.2	4.4	>26.2
					10	0	35	0	26.2	4.4	>26.2
					>10	0	35	0	26.2	4.4	>26.2
2-V-42	5155II	934270	32.8	23	1	1	1	23	32.8	32.8	6.9
					2	9	10	22	10.9	10.4	7.0
					3	7	17	13	12.4	8.0	9.1
					4	3	20	6	19.0	7.3	13.4
					5	2	22	3	23.2	7.0	19.0
					6	1	23	1	32.8	6.9	32.8
					7	0	23	0	>32.8	6.9	>32.8
					8	0	23	0	>32.8	6.9	>32.8
					9	0	23	0	>32.8	6.9	>32.8
					10	0	23	0	>32.8	6.9	>32.8
					>10	0	23	0	>32.8	6.9	>32.8
2-V-44	5154I	041218	49.2	61	1	0	0	61	>49.2	>49.2	49.2
					2	20	20	61	11.0	11.0	6.3
					3	11	31	41	14.9	8.8	7.7
					4	1	32	30	49.2	8.7	9.0
					5	7	39	29	18.6	7.9	9.2
					6	13	52	22	13.7	6.8	10.5
					7	0	52	9	>49.2	6.8	16.4
					8	0	52	9	>49.2	6.8	16.4
					9	1	53	9	49.2	6.8	16.4
					10	1	54	8	49.2	6.7	17.4
					>10	7	61	7	18.6	6.3	18.6
2-V-45	5154I	077206	78.8	41	1	0	0	41	>78.8	>78.8	12.3
					2	1	1	41	78.8	78.8	12.3
					3	2	3	40	55.6	45.5	12.4
					4	2	5	38	55.6	35.2	12.8
					5	3	8	36	45.5	27.8	13.1
					6	6	14	33	32.2	21.1	13.7
					7	5	19	27	35.2	18.1	15.2
					8	4	23	22	39.4	16.4	16.8
					9	6	29	18	32.2	14.6	18.6
					10	4	33	12	39.4	13.7	22.7
					>10	8	41	8	27.8	12.3	27.8

(Continued)

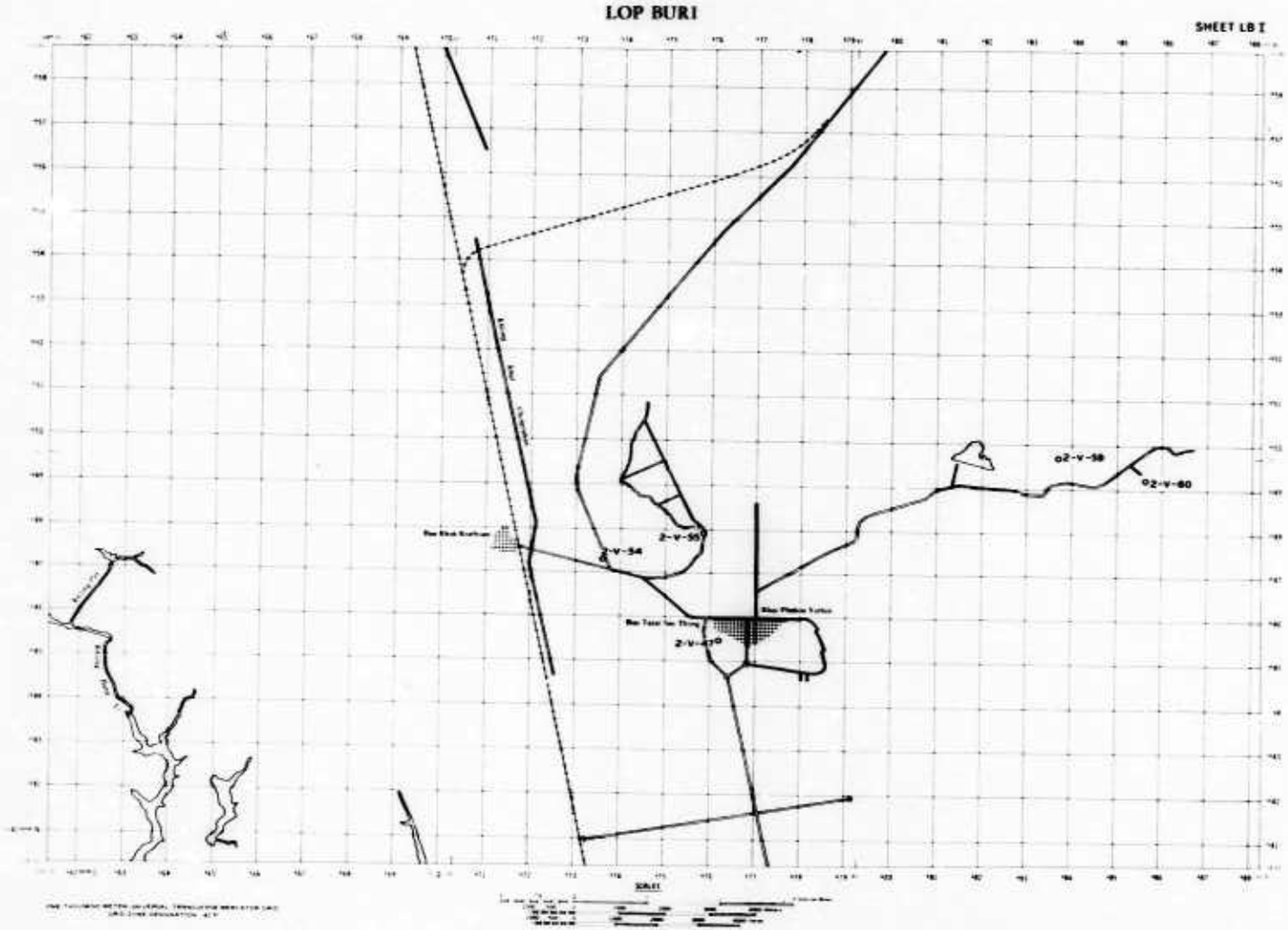
Table A4 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
2-V-46	5155II	986263	98.4	16	1	0	0	16	>98.4	>98.4	24.6
					2	0	0	16	>98.4	>98.4	24.6
					3	0	0	16	>98.4	>98.4	24.6
					4	8	8	16	34.8	34.8	24.6
					5	5	13	8	44.0	27.2	34.8
					6	3	16	3	56.8	24.6	56.8
					7	0	16	0	>98.4	24.6	>98.4
					8	0	16	0	>98.4	24.6	>98.4
					9	0	16	0	>98.4	24.6	>98.4
					10	0	16	0	>98.4	24.6	>98.4
					>10	0	16	0	>98.4	24.6	>98.4
2-V-47	5155IV	762455	32.8	32	1	0	0	32	>32.8	>32.8	5.8
					2	15	15	32	8.5	8.5	5.8
					3	8	23	17	11.6	6.8	8.0
					4	5	28	9	14.7	6.2	10.9
					5	3	31	4	19.0	5.9	16.4
					6	0	31	1	>32.8	5.9	32.8
					7	1	32	1	32.8	5.8	32.8
					8	0	32	0	>32.8	5.8	>32.8
					9	0	32	0	>32.8	5.8	>32.8
					10	0	32	0	>32.8	5.8	>32.8
					>10	0	32	0	>32.8	5.8	>32.8
2-V-49	5154I	053213	39.4	39	1	16	16	39	9.9	9.9	6.3
					2	16	32	23	9.9	7.0	8.2
					3	3	35	7	22.8	6.7	14.9
					4	4	39	4	39.4	6.3	19.7
					5	0	39	0	>39.4	6.3	>39.4
					6	0	39	0	>39.4	6.3	>39.4
					7	0	39	0	>39.4	6.3	>39.4
					8	0	39	0	>39.4	6.3	>39.4
					9	0	39	0	>39.4	6.3	>39.4
					10	0	39	0	>39.4	6.3	>39.4
					>10	0	39	0	>39.4	6.3	>39.4
2-V-50	5155III	791374	39.4	25	1	0	0	25	>39.4	>39.4	7.9
					2	11	11	25	11.9	11.9	7.9
					3	7	18	14	14.9	9.3	10.5
					4	6	24	7	16.1	8.0	14.9
					5	1	25	1	39.4	7.9	39.4
					6	0	25	0	>39.4	7.9	>39.4
					7	0	25	0	>39.4	7.9	>39.4
					8	0	25	0	>39.4	7.9	>39.4
					9	0	25	0	>39.4	7.9	>39.4
					10	0	25	0	>39.4	7.9	>39.4
					>10	0	25	0	>39.4	7.9	>39.4
2-V-52	5155III	631380	78.8	35	1	0	0	35	>78.8	>78.8	13.4
					2	4	4	35	39.4	39.4	13.4
					3	3	7	31	45.5	29.8	14.1
					4	11	18	28	23.8	18.6	14.9
					5	5	23	17	35.3	16.4	19.1
					6	6	29	12	32.2	14.6	22.7
					7	1	30	6	78.8	14.4	32.2
					8	0	30	5	>78.8	14.4	35.3
					9	1	31	5	78.8	14.2	35.3
					10	1	32	4	78.8	14.0	39.4
					>10	3	35	3	45.5	13.4	45.5
2-V-54	5155IV	736473	39.4	25	1	19	19	25	9.0	9.0	7.9
					2	4	23	6	19.7	8.2	16.1
					3	1	24	2	39.4	8.1	27.8
					4	0	24	1	>39.4	8.1	39.4
					5	1	25	1	39.4	7.9	39.4
					6	0	25	0	>39.4	7.9	>39.4
					7	0	25	0	>39.4	7.9	>39.4
					8	0	25	0	>39.4	7.9	>39.4
					9	0	25	0	>39.4	7.9	>39.4
					10	0	25	0	>39.4	7.9	>39.4
					>10	0	25	0	>39.4	7.9	>39.4
2-V-55	5155IV	758479	39.4	24	1	1	1	24	39.4	39.4	8.1
					2	8	9	23	13.9	13.1	8.2
					3	7	16	15	14.9	9.9	10.2
					4	7	23	8	14.9	8.2	13.9
					5	1	24	1	39.4	8.1	39.4
					6	0	24	0	>39.4	8.1	>39.4
					7	0	24	0	>39.4	8.1	>39.4
					8	0	24	0	>39.4	8.1	>39.4
					9	0	24	0	>39.4	8.1	>39.4
					10	0	24	0	>39.4	8.1	>39.4
					>10	0	24	0	>39.4	8.1	>39.4

(Continued)

Table A4 (Concluded)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
2-V-56	5154II	110999	164.0	3991	1	0	0	3,991	>164.0	>164.0	2.6
					2	3,903	3,903	3,991	2.6	2.6	2.6
					3	3	3,906	88	94.8	2.6	17.5
					4	0	3,906	85	>164.0	2.6	17.8
					5	12	3,918	85	47.4	2.6	17.8
					6	12	3,930	73	47.4	2.6	21.0
					7	6	3,936	61	67.0	2.6	24.0
					8	8	3,944	55	58.0	2.6	24.0
					9	12	3,956	47	47.4	2.6	24.0
					10	6	3,962	35	67.0	2.6	27.8
					>10	29	3,991	29	30.4	2.6	30.4
2-V-57	5154II	109985	49.2	32	1	0	0	32	>49.2	>49.2	8.7
					2	0	0	32	>49.2	>49.2	8.7
					3	0	0	32	>49.2	>49.2	8.7
					4	3	3	32	28.4	28.4	8.7
					5	1	4	29	49.2	24.6	9.1
					6	8	12	28	17.4	14.2	9.3
					7	6	18	20	20.0	11.6	16.4
					8	5	23	14	22.0	10.3	16.4
					9	5	28	9	22.0	9.3	16.4
					10	0	28	4	>49.2	8.7	24.6
					>10	4	32	4	24.6	8.7	24.6
2-V-59	5155IV	837497	32.8	23	1	0	0	23	>32.8	>32.8	6.8
					2	1	1	23	32.8	32.8	6.8
					3	12	13	22	9.5	9.1	7.0
					4	2	15	10	23.2	8.5	10.4
					5	2	17	8	23.2	8.0	11.6
					6	5	22	6	14.7	7.0	13.4
					7	1	23	1	32.8	6.8	32.8
					8	0	23	0	>32.8	6.8	>32.8
					9	0	23	0	>32.8	6.8	>32.8
					10	0	23	0	>32.8	6.8	>32.8
					>10	0	23	0	>32.8	6.8	>32.8
2-V-60	5155IV	856492	39.4	28	1	1	1	28	39.4	39.4	7.5
					2	4	5	27	19.7	17.6	7.6
					3	9	14	23	13.1	10.5	8.2
					4	8	22	14	13.9	8.4	10.5
					5	2	24	6	27.8	8.1	16.1
					6	3	27	4	22.8	7.6	19.7
					7	1	28	1	39.4	7.5	39.4
					8	0	28	0	>39.4	7.5	>39.4
					9	0	28	0	>39.4	7.5	>39.4
					10	0	28	0	>39.4	7.5	>39.4
					>10	0	28	0	>39.4	7.5	>39.4

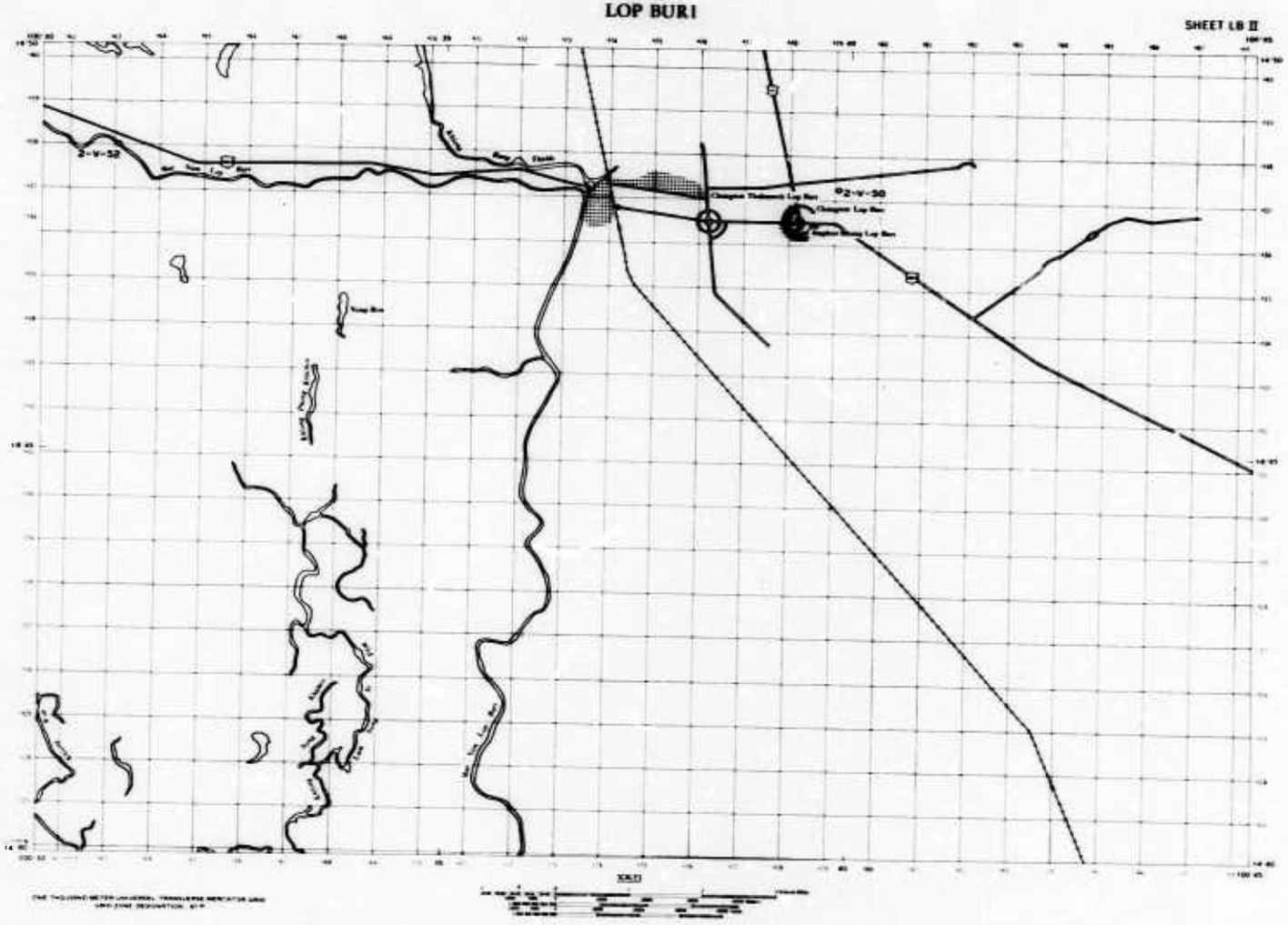


VEGETATION SITES
LOP BURI STUDY AREA
SHEET LB I

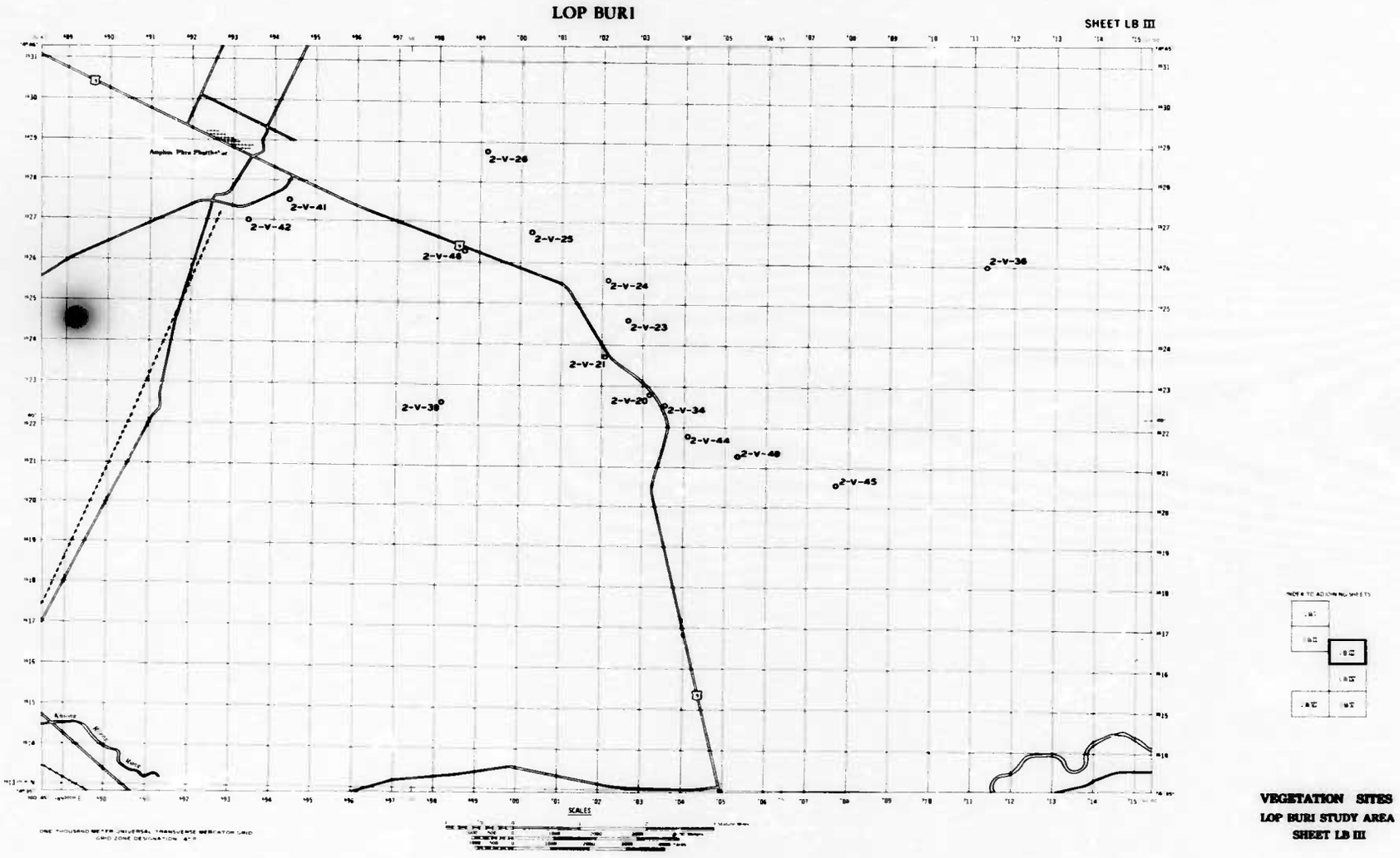
A23

FIG. A6

FIG. A7



VEGETATION SITES
LOP BURI STUDY AREA
SHEET LB II

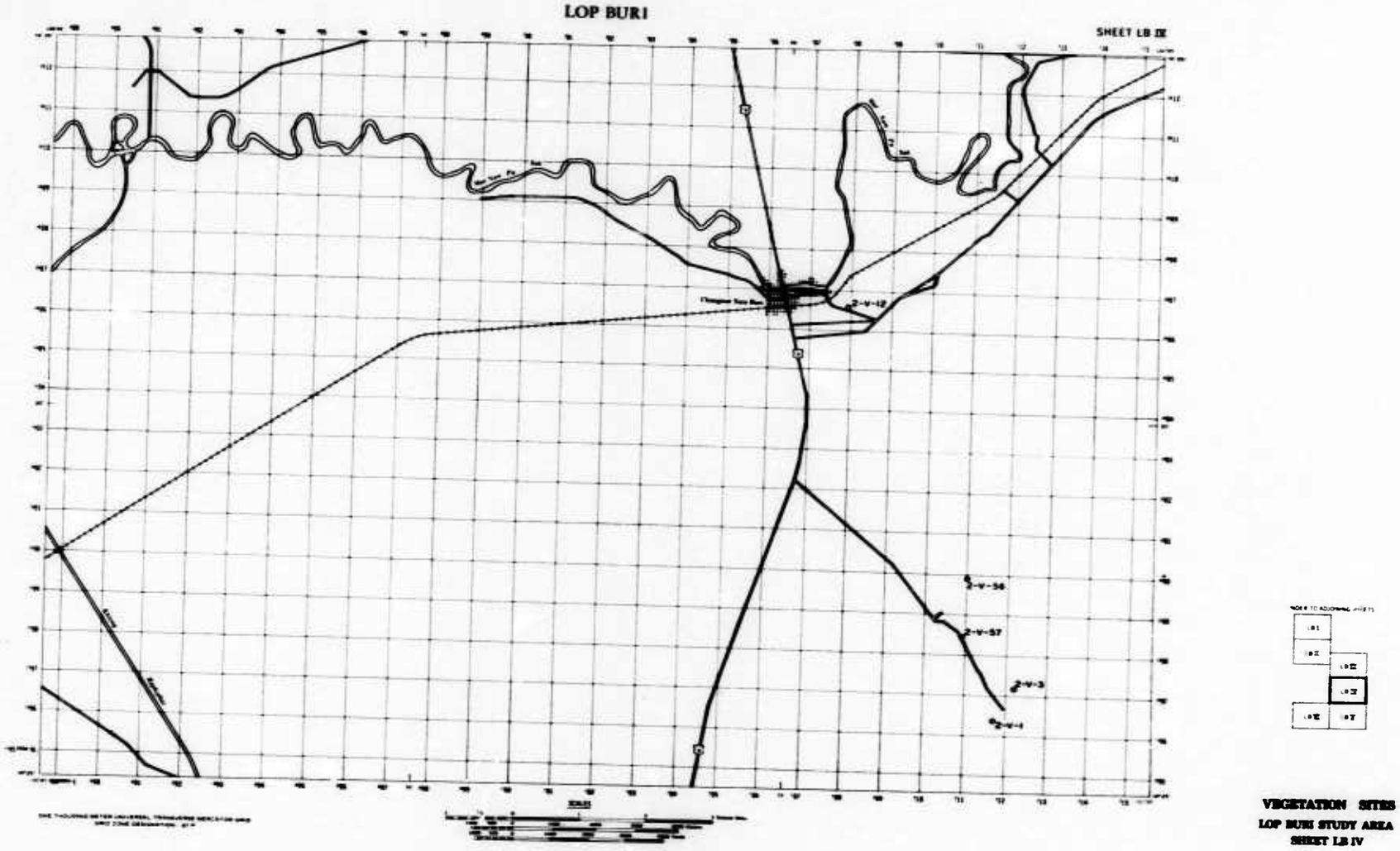


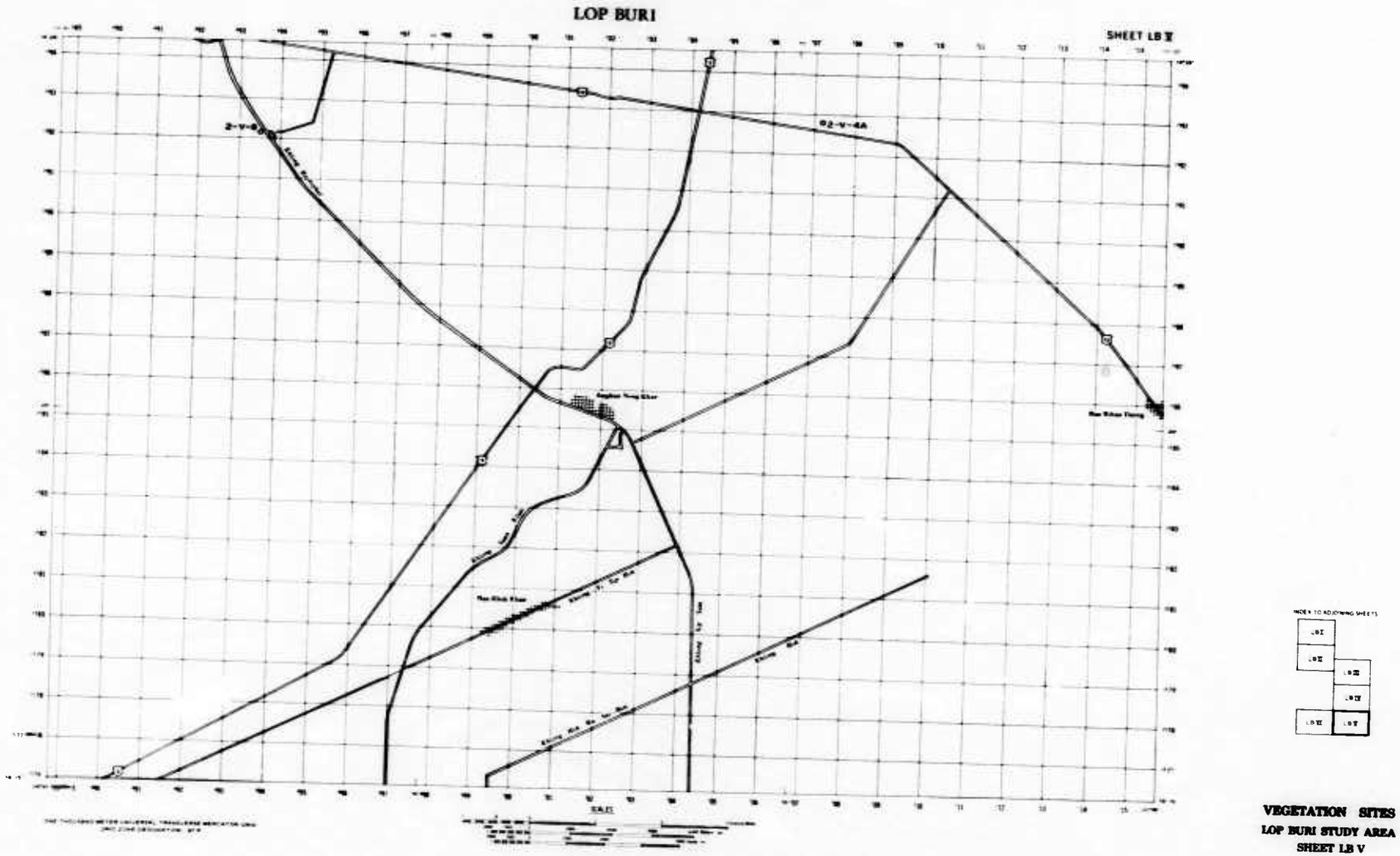
VEGETATION SITES
LOP BURI STUDY AREA
SHEET LB III

A25

FIG. A8

FIG. A9


LOP BURI
SHEET LB III
2-V-12
2-V-56
2-V-57
2-V-3
2-V-4
VEGETATION SITES
LOP BURI STUDY AREA
SHEET LB IV



VEGETATION SITES
LOP BURI STUDY AREA
SHEET LB V

FIG. A10

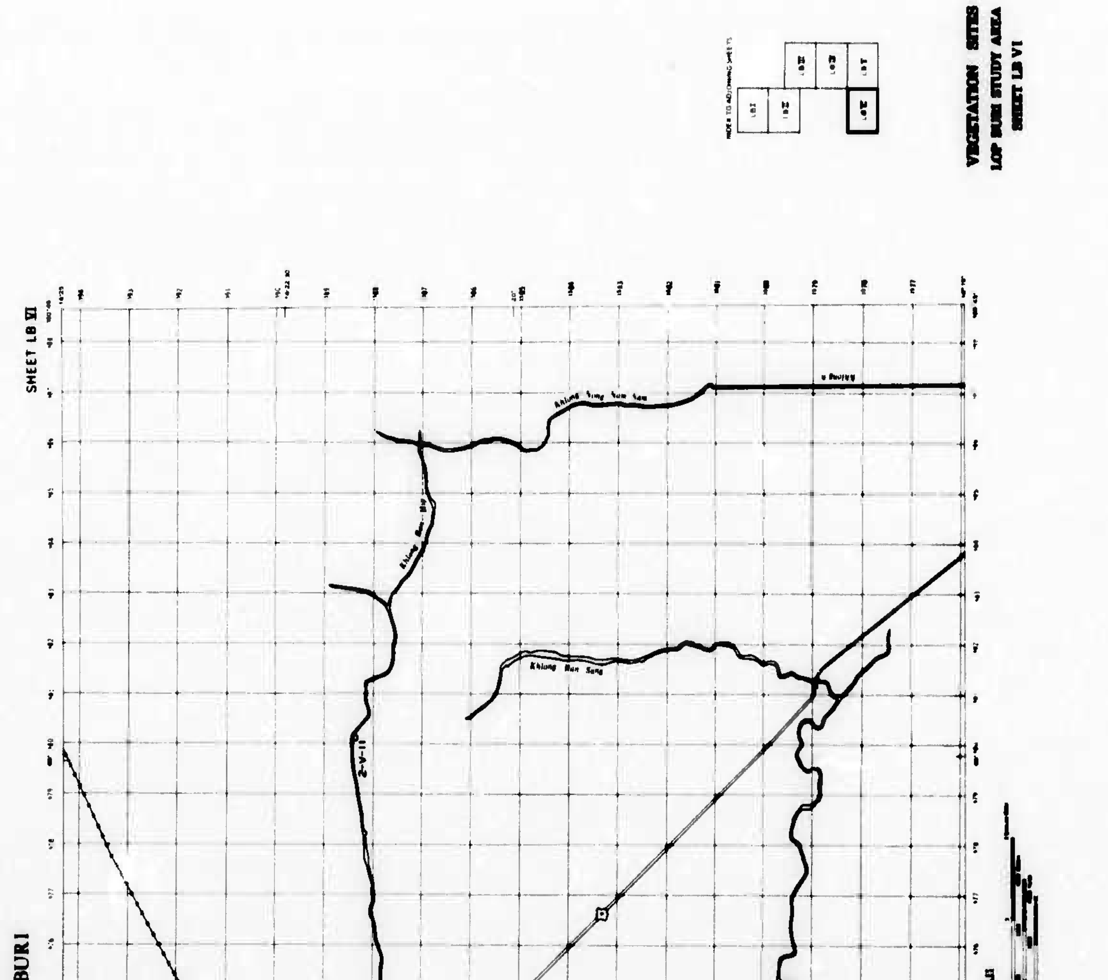

LOP BURI
SHEET LB VI
VEGETATION SITES
LOP BURI STUDY AREA
SHEET LB VI

FIG. A11

CHIANG MAI STUDY AREA

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Table A5

Vegetation Site Summation

Chiang Mai

Site No.	Location: Map Sheet*	Location: Grid Coordinates	Location: Fig. No.	Date Sampled
3-V-1	4767II	930676	A15	25 Sept 1964
3-V-2	4767II	914646	A15	12 Sept 1964
3-V-3	4766I	903626	A15	24 Sept 1964
3-V-4	4766I	895595	A15	24 Sept 1964
3-V-5	4766I	894567	A15	25 Sept 1964
3-V-6	4766I	890573	A15	23 Sept 1964
3-V-7	4766I	884563	A15	15 Sept 1964
3-V-8	4766I	883561	A15	15 Sept 1964
3-V-9	4766I	880538	**	14 Sept 1964
3-V-10	4766II	790429	**	13 Sept 1964
3-V-11	4766II	778419	**	9 Sept 1964
3-V-12	4766II	766405	**	12 Sept 1964
3-V-13	4766III	704398	**	12 Sept 1964
3-V-14	4766III	666290	**	11 Sept 1964
3-V-15	4765IV	656265	**	11 Sept 1964
3-V-16	4765IV	623230	**	10 Sept 1964
3-V-17	4765IV	592179	**	9 Sept 1964
3-V-18	4765IV	651264	**†	10 Sept 1964
3-V-19	4867IV	156864	A13	6 Oct 1964
3-V-20	4867IV	158863	A13	5 Oct 1964
3-V-21	4767II	947798	A12	26 Sept 1964
3-V-22	4767I	966847	A12	7 Oct 1964
3-V-23	4767I	926919	**	27 Sept 1964
3-V-24	4767I	915917	**	27 Sept 1964
3-V-25	4767I	961869	A12	8 Oct 1964
3-V-26	4767II	980813	A12	26 Sept 1964
3-V-27	4867III	040763	A13	26 Sept 1964
3-V-28	4767I	922969	**	29 Sept 1964
3-V-29	4767I	920985	**	29 Sept 1964
3-V-30	4767I	944003	**	1 Oct 1964
3-V-31	4867IV	176878	A13	9 Oct 1964
3-V-32	4867IV	180885	A13	9 Oct 1964
3-V-33	4867IV	185887	A13	10 Oct 1964
3-V-34	4867IV	188887	A13	11 Oct 1964
3-V-35	4867IV	193891	A13	12 Oct 1964
3-V-36	4867IV	228902	A13	12 Oct 1964
3-V-37	4867IV	105895	A13	14 Oct 1964
3-V-38	4867IV	065908	A13	17 Oct 1964
3-V-39	4867IV	064913	A13	17 Oct 1964
3-V-40	4867IV	026922	**	15 Oct 1964
3-V-41	4867IV	027923	**	15 Oct 1964
3-V-42	4867IV	123914	A13	16 Oct 1964
3-V-43	4866IV	098458	**	27 Oct 1964
3-V-44	4866IV	104459	**	26 Oct 1964
3-V-45	4866IV	117458	**	25 Oct 1964
3-V-46	4866IV	129459	**	25 Oct 1964
3-V-47	4867III	186688	A14	28 Oct 1964
3-V-48	4867III	199696	A14	28 Oct 1964
3-V-49	4867III	251732	A13	29 Oct 1964
3-V-50	4767II	897689	A15	30 Oct 1964
3-V-51	4766I	847616	A15	30 Oct 1964
3-V-52	4767II	854749	A12	31 Oct 1964
3-V-53	4766I	816471	**	1 Nov 1964
3-V-54	4766I	783475	**	1 Nov 1964

Note: Grid coordinates are set up according to Military Grid System; the first three numbers represent longitude, and the second three numbers represent latitude.

* AMS, L708, 1:50,000.

** Site outside figure limits.

† All stems <1 in.

Table A6

Summary of Vegetation Field Data

Chiang Mai

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter* (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
3-V-1	4767II	930676	164.0	34	1	1	1	34	164.00	164.00	28.20
					2	12	13	33	47.40	45.60	28.30
					3	19	32	21	37.70	29.00	35.50
					4	2	34	2	116.30	28.20	115.00
					5	0	34	0	>164.00	28.20	>164.00
					6	0	34	0	>164.00	28.20	>164.00
					7	0	34	0	>164.00	28.20	>164.00
					8	0	34	0	>164.00	28.20	>164.00
					9	0	34	0	>164.00	28.20	>164.00
					10	0	34	0	>164.00	28.20	>164.00
					>10	0	34	0	>164.00	28.20	>164.00
3-V-2	4767II	914646	2.5	24	1	24	24	24	0.51	0.51	0.51
					2	0	24	0	>2.50	0.51	>2.50
					3	0	24	0	>2.50	0.51	>2.50
					4	0	24	0	>2.50	0.51	>2.50
					5	0	24	0	>2.50	0.51	>2.50
					6	0	24	0	>2.50	0.51	>2.50
					7	0	24		>2.50	0.51	>2.50
					8	0	24	0	>2.50	0.51	>2.50
					9	0	24	0	>2.50	0.51	>2.50
					10	0	24	0	>2.50	0.51	>2.50
					>10	0	24	0	>2.50	0.51	>2.50
3-V-3	4766I	903626	196.8	92	1	35	35	92	33.30	33.30	20.50
					2	9	44	57	65.60	29.70	26.10
					3	1	45	48	196.80	29.40	28.20
					4	4	49	47	98.40	28.10	28.70
					5	4	53	43	98.40	27.00	30.00
					6	6	59	39	80.30	25.60	31.60
					7	6	65	33	80.30	24.50	34.30
					8	4	69	27	98.40	23.70	37.80
					9	6	75	23	80.30	22.80	41.00
					10	17	92	17	47.80	20.50	47.80
					>10	0	92	0	>196.80	20.50	>196.80
3-V-4	4766I	895595	196.8	53	1	1	1	53	196.80	196.80	27.10
					2	18	19	52	46.50	45.30	27.20
					3	7	26	34	74.50	38.60	33.80
					4	27	53	27	37.90	27.10	37.80
					5	0	53	0	>196.80	27.10	>196.80
					6	0	53	0	>196.80	27.10	>196.80
					7	0	53	0	>196.80	27.10	>196.80
					8	0	53	0	>196.80	27.10	>196.80
					9	0	53	0	>196.80	27.10	>196.80
					10	0	53	0	>196.80	27.10	>196.80
					>10	0	53	0	>196.80	27.10	>196.80
3-V-5	4766I	894567	196.8	103	1	10	10	103	62.40	62.40	19.40
					2	7	17	93	74.60	46.50	20.40
					3	7	24	86	74.60	40.20	21.30
					4	12	36	79	55.20	32.80	22.20
					5	4	40	67	98.40	31.20	24.10
					6	12	52	63	55.20	27.40	24.90
					7	14	66	51	52.60	24.30	27.60
					8	7	73	37	74.60	23.00	32.40
					9	3	76	30	114.00	22.60	36.00
					10	2	78	27	139.00	22.30	37.80
					>10	25	103	25	39.40	19.40	39.40
3-V-6	4766I	890573	98.4	53	1	0	0	53	>98.40	>98.40	13.50
					2	0	0	53	>98.40	>98.40	13.50
					3	0	0	53	>98.40	>98.40	13.50
					4	1	1	53	98.40	98.40	13.90
					5	3	4	52	56.90	49.20	13.70
					6	9	13	49	32.80	27.30	14.00
					7	9	22	40	32.80	21.00	15.60
					8	8	30	31	38.60	18.00	17.70
					9	15	45	23	25.40	14.70	20.50
					10	4	49	8	49.20	14.20	34.80
					>10	4	53	4	49.20	13.50	49.20
3-V-7	4766I	884563	49.2	63	1	47	47	63	7.20	7.20	6.20
					2	13	60	16	13.70	6.40	12.30
					3	2	62	3	34.80	6.30	28.40
					4	1	63	1	49.20	6.20	49.20
					5	0	63	0	>49.20	6.20	>49.20
					6	0	63	0	>49.20	6.20	>49.20
					7	0	63	0	>49.20	6.20	>49.20
					8	0	63	0	>49.20	6.20	>49.20
					9	0	63	0	>49.20	6.20	>49.20
					10	0	63	0	>49.20	6.20	>49.20
					>10	0	63	0	>49.20	6.20	>49.20

(Continued)

* Effective diameter includes clumps of stems that have been converted to a single diameter stem.

Table A6 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams > Stated ESD
3-V-8	4766I	883561	49.2	89	1	59	59	89	6.40	6.40	5.20
					2	28	87	30	9.50	5.30	9.00
					3	2	89	2	34.90	5.20	34.90
					4	0	89	0	>49.20	5.20	>49.20
					5	0	89	0	>49.20	5.20	>49.20
					6	0	89	0	>49.20	5.20	>49.20
					7	0	89	0	>49.20	5.20	>49.20
					8	0	89	0	>49.20	5.20	>49.20
					9	0	89	0	>49.20	5.20	>49.20
					10	0	89	0	>49.20	5.20	>49.20
					>10	0	89	0	>49.20	5.20	>49.20
3-V-9	4766I	880538	65.6	80	1	69	69	80	7.90	7.90	7.30
					2	11	80	11	19.80	7.30	19.80
					3	0	80	0	>65.60	7.30	>65.60
					4	0	80	0	>65.60	7.30	>65.60
					5	0	80	0	>65.60	7.30	>65.60
					6	0	80	0	>65.60	7.30	>65.60
					7	0	80	0	>65.60	7.30	>65.60
					8	0	80	0	>65.60	7.30	>65.60
					9	0	80	0	>65.60	7.30	>65.60
					10	0	80	0	>65.60	7.30	>65.60
					>10	0	80	0	>65.60	7.30	>65.60
3-V-10	4766II	790429	98.4	123	1	68	68	123	11.90	11.90	8.80
					2	29	97	55	18.30	9.90	13.20
					3	7	104	26	37.20	9.60	19.30
					4	8	112	19	34.80	9.30	22.50
					5	3	115	11	56.90	9.20	29.70
					6	4	119	8	49.20	9.00	34.80
					7	1	120	4	98.40	9.00	47.00
					8	2	122	3	69.50	8.90	57.00
					9	0	122	1	>98.40	8.90	98.40
					10	0	122	1	>98.40	8.90	98.40
					>10	1	123	1	98.40	8.80	98.40
3-V-11	4766II	778419	9.8	13	1	9	9	13	3.30	3.30	2.70
					2	4	13	4	4.90	2.70	4.90
					3	0	13	0	>9.80	2.70	>9.80
					4	0	13	0	>9.80	2.70	>9.80
					5	0	13	0	>9.80	2.70	>9.80
					6	0	13	0	>9.80	2.70	>9.80
					7	0	13	0	>9.80	2.70	>9.80
					8	0	13	0	>9.80	2.70	>9.80
					9	0	13	0	>9.80	2.70	>9.80
					10	0	13	0	>9.80	2.70	>9.80
					>10	0	13	0	>9.80	2.70	>9.80
3-V-12	4766II	766405	262.5	46	1	0	0	46	>262.50	>262.50	39.80
					2	0	0	46	>262.50	>262.50	39.80
					3	1	1	46	262.50	262.50	39.80
					4	1	2	45	262.50	185.90	39.20
					5	1	3	44	262.50	152.00	39.70
					6	8	11	43	92.80	79.10	40.10
					7	4	15	35	131.30	67.90	44.40
					8	7	22	31	99.50	56.00	47.30
					9	4	26	24	131.30	51.50	53.80
					10	5	31	20	117.60	47.30	58.70
					>10	15	46	15	67.90	39.80	67.90
3-V-13	4766III	704398	32.8	32	1	13	13	32	9.10	9.10	5.80
					2	12	25	19	9.50	6.60	7.50
					3	6	31	7	13.40	5.90	12.40
					4	1	32	1	32.80	5.80	32.80
					5	0	32	0	>32.80	5.80	>32.80
					6	0	32	0	>32.80	5.80	>32.80
					7	0	32	0	>32.80	5.80	>32.80
					8	0	32	0	>32.80	5.80	>32.80
					9	0	32	0	>32.80	5.80	>32.80
					10	0	32	0	>32.80	5.80	>32.80
					>10	0	32	0	>32.80	5.80	>32.80
3-V-14	4766III	666290	137.8	112	1	40	40	112	21.80	21.80	13.00
					2	53	93	72	18.90	14.30	17.30
					3	0	93	19	>18.90	14.30	31.50
					4	5	98	19	61.80	13.90	31.50
					5	5	103	14	61.80	13.60	36.80
					6	9	112	9	45.90	13.00	45.90
					7	0	93	0	>137.80	13.00	>137.80
					8	0	93	0	>137.80	13.00	>137.80
					9	0	93	0	>137.80	13.00	>137.80
					10	0	93	0	>137.80	13.00	>137.80
					>10	0	93	0	>137.80	13.00	>137.80

(Continued)

Table A6 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
3-V-15	4765IV	656265	13.1	7	1	7	7	7	5.00	5.00	5.00
					2	0	7	0	>13.10	5.00	>13.10
					3	0	7	0	>13.10	5.00	>13.10
					4	0	7	0	>13.10	5.00	>13.10
					5	0	7	0	>13.10	5.00	>13.10
					6	0	7	0	>13.10	5.00	>13.10
					7	0	7	0	>13.10	5.00	>13.10
					8	0	7	0	>13.10	5.00	>13.10
					9	0	7	0	>13.10	5.00	>13.10
					10	0	7	0	>13.10	5.00	>13.10
					>10	0	7	0	>13.10	5.00	>13.10
3-V-16	4765IV	623230	131.2	77	1	18	18	77	30.90	30.90	15.00
					2	29	47	59	24.40	19.20	17.10
					3	5	52	30	58.60	18.20	24.00
					4	13	65	25	36.50	16.30	26.30
					5	6	71	12	53.60	15.60	37.80
					6	3	74	6	75.90	15.30	53.80
					7	0	74	3	>131.20	15.30	76.00
					8	0	74	3	>131.20	15.30	76.00
					9	1	75	3	131.20	15.20	76.00
					10	0	75	2	>131.20	15.20	93.00
					>10	2	77	2	93.00	15.00	93.00
3-V-17	4765IV	592179	39.4	39	1	13	13	39	10.90	10.90	6.30
					2	19	32	26	9.10	7.00	7.70
					3	6	38	7	16.10	6.40	14.90
					4	1	39	1	39.40	6.30	39.40
					5	0	39	0	>39.40	6.30	>39.40
					6	0	39	0	>39.40	6.30	>39.40
					7	0	39	0	>39.40	6.30	>39.40
					8	0	39	0	>39.40	6.30	>39.40
					9	0	39	0	>39.40	6.30	>39.40
					10	0	39	0	>39.40	6.30	>39.40
					>10	0	39	0	>39.40	6.30	>39.40
3-V-19	4867IV	156864	131.2	1065	1	566	566	1065	5.50	5.50	4.00
					2	329	895	499	7.30	4.40	5.90
					3	126	1021	170	11.70	4.10	10.10
					4	32	1053	44	23.20	4.00	19.80
					5	3	1056	12	75.60	4.00	37.80
					6	4	1060	9	65.60	4.00	43.90
					7	1	1061	5	131.20	4.00	59.00
					8	1	1062	4	131.20	4.00	65.60
					9	1	1063	3	131.20	4.00	75.60
					10	1	1064	2	131.20	4.00	93.00
					>10	1	1065	1	131.20	4.00	131.20
3-V-20	4867IV	158863	78.8	232	1	79	79	232	8.90	8.90	5.20
					2	92	171	153	8.20	6.00	6.40
					3	23	194	61	16.50	5.70	10.10
					4	24	218	38	16.10	5.40	12.80
					5	7	225	14	29.90	5.30	21.00
					6	4	229	7	39.90	5.20	29.80
					7	0	229	3	>78.80	5.20	45.50
					8	2	231	3	55.70	5.20	45.50
					9	0	231	1	>78.80	5.20	78.80
					10	0	231	1	>78.80	5.20	78.80
					>10	1	232	1	78.80	5.20	78.80
3-V-21	4767II	947798	98.4	124	1	25	25	124	19.70	19.70	8.80
					2	46	71	99	14.50	11.60	9.90
					3	13	84	53	27.40	10.70	13.50
					4	15	99	40	25.40	9.90	15.50
					5	6	105	25	40.10	9.60	19.70
					6	10	115	19	31.10	9.20	22.50
					7	2	117	9	69.60	9.10	32.70
					8	5	122	7	43.70	8.90	37.10
					9	0	122	2	>98.40	8.90	69.60
					10	0	122	2	>98.40	8.90	69.60
					>10	2	124	2	69.60	8.80	69.60
3-V-22	4767I	966847	98.4	728	1	283	283	728	5.90	5.90	3.60
					2	356	639	445	5.20	3.90	4.70
					3	65	704	89	12.20	3.70	10.40
					4	19	723	24	22.60	3.70	19.90
					5	0	723	5	>98.40	3.70	44.00
					6	1	724	5	98.40	3.70	44.00
					7	1	725	4	98.40	3.70	49.20
					8	0	725	3	>98.40	3.70	57.00
					9	1	726	3	98.40	3.60	57.00
					10	0	726	2	>98.40	3.60	69.60
					>10	2	728	2	69.60	3.60	69.60

(Continued)

Table A6 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing, ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
3-V-23	4767I	926919	78.8	190	1	25	25	190	15.80	15.80	5.70
					2	54	79	165	10.70	8.70	6.10
					3	62	141	111	10.00	6.70	7.50
					4	28	169	49	14.90	6.10	11.20
					5	9	178	21	26.30	5.90	17.20
					6	6	184	12	32.20	5.80	22.80
					7	2	186	6	55.90	5.80	32.10
					8	2	188	4	55.90	5.80	39.30
					9	1	189	2	78.80	5.70	55.70
					10	1	190	1	78.80	5.70	78.80
					>10	0	190	0	>78.80	5.70	>78.80
3-V-24	4767I	915917	196.8	1910	1	1035	1035	1910	6.10	6.10	4.50
					2	423	1458	875	9.60	5.20	6.70
					3	82	1540	452	21.80	5.00	9.30
					4	168	1708	370	15.20	4.80	10.20
					5	125	1833	202	17.60	4.60	13.80
					6	39	1872	77	31.50	4.50	22.40
					7	12	1884	38	56.80	4.50	31.90
					8	2	1886	26	139.00	4.50	38.50
					9	10	1896	24	62.40	4.50	40.10
					10	1	1897	14	196.80	4.50	52.50
					>10	13	1910	13	54.60	4.50	54.60
3-V-25	4767I	961869	65.6	152	1	77	77	152	7.50	7.50	5.30
					2	56	133	75	8.80	5.70	7.60
					3	12	145	19	19.00	5.50	15.00
					4	2	147	7	46.40	5.40	24.80
					5	3	150	5	38.00	5.40	29.40
					6	1	151	2	65.60	5.30	46.40
					7	0	151	1	>65.60	5.30	65.60
					8	0	151	1	>65.60	5.30	65.60
					9	1	152	1	65.60	5.40	65.60
					10	0	152	0	>65.60	5.40	>65.60
					>10	0	152	0	>65.60	5.40	>65.60
3-V-26	4767II	980813	98.4	266	1	247	247	266	6.30	6.30	6.00
					2	14	261	14	27.00	6.10	22.50
					3	1	262	1	98.40	6.10	44.00
					4	2	264	2	69.60	6.10	49.20
					5	0	264	1	>98.40	6.10	69.60
					6	0	264	1	>98.40	6.10	69.60
					7	1	265	1	98.40	6.00	69.60
					8	1	266	1	98.40	6.00	98.40
					9	0	266	0	>98.40	6.00	>98.40
					10	0	266	0	>98.40	6.00	>98.40
					>10	0	266	0	>98.40	6.00	>98.40
3-V-27	4767III	040763	164.0	67	1	25	25	67	32.80	32.80	20.00
					2	21	46	42	35.80	24.20	25.10
					3	11	57	21	49.50	21.80	35.50
					4	9	66	10	54.70	20.20	51.30
					5	0	66	1	>164.00	20.20	164.00
					6	0	66	1	>164.00	20.20	164.00
					7	0	66	1	>164.00	20.20	164.00
					8	1	67	1	164.00	20.00	164.00
					9	0	67	0	>164.00	20.00	>164.00
					10	0	67	0	>164.00	20.00	>164.00
					>10	0	67	0	>164.00	20.00	>164.00
3-V-28	4767I	[illegible]	[illegible]	1454	1	719	719	1454	6.10	6.10	4.30
					2	601	1320	735	6.70	4.50	6.00
					3	21	1341	134	35.70	4.50	14.10
					4	14	1355	113	43.90	4.50	15.20
					5	21	1376	99	35.70	4.40	16.30
					6	21	1357	78	35.70	4.40	18.40
					7	31	1428	57	29.50	4.30	21.50
					8	15	1443	26	42.40	4.30	31.80
					9	4	1447	11	82.60	4.30	48.80
					10	3	1450	7	94.80	4.30	61.40
					>10	4	1454	4	82.00	4.30	82.00
3-V-29	4767I	920985	164.0	930	1	314	314	930	9.30	9.30	5.40
					2	440	754	616	7.80	6.00	6.50
					3	42	796	176	25.40	.80	12.20
					4	38	834	134	26.70	5.70	14.10
					5	11	845	96	49.60	5.60	16.80
					6	11	856	85	49.60	5.60	17.60
					7	12	868	74	47.40	5.50	18.80
					8	19	887	62	37.70	5.50	20.60
					9	19	906	43	37.70	5.50	24.80
					10	7	913	24	62.20	5.40	33.20
					>10	17	930	17	39.80	5.40	39.80

(Continued)

Table A6 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
3-V-30	4767I	944003	164.0	2975	1	2357	2357	2975	3.40	3.40	3.00
					2	432	2789	618	7.90	3.10	6.50
					3	85	2874	186	17.80	3.00	11.90
					4	24	2898	101	33.50	3.00	16.10
					5	29	2927	77	30.00	3.00	18.50
					6	23	2950	48	34.20	3.00	23.40
					7	12	2962	25	47.40	3.00	32.50
					8	10	2972	13	51.90	3.00	45.00
					9	1	2973	3	164.00	3.00	94.00
					10	2	2975	2	116.00	3.00	116.00
					>10	0	2975	0	>164.00	3.00	>164.00
3-V-31	4867IV	176878	98.4	324	1	129	129	324	8.70	8.70	5.50
					2	77	206	195	11.20	6.90	7.00
					3	45	251	118	14.70	6.20	9.10
					4	26	277	73	19.30	5.90	11.50
					5	9	286	47	32.80	5.80	14.30
					6	11	297	38	29.60	5.70	15.90
					7	14	311	27	26.30	5.60	18.90
					8	4	315	13	49.20	5.50	27.20
					9	2	317	9	69.60	5.50	32.80
					10	0	317	7	>98.40	5.50	37.20
					>10	7	324	7	37.20	5.50	37.20
3-V-32	4867IV	180885	39.4	97	1	54	54	97	5.40	5.40	4.00
					2	28	82	43	7.50	4.40	6.00
					3	8	90	15	13.90	4.20	10.20
					4	3	93	7	22.80	4.10	14.90
					5	1	94	4	39.40	4.10	19.70
					6	2	96	3	27.90	4.00	22.80
					7	1	97	1	39.40	4.00	39.40
					8	0	97	0	>39.40	4.00	>39.40
					9	0	97	0	>39.40	4.00	>39.40
					10	0	97	0	>39.40	4.00	>39.40
					>10	0	97	0	>39.40	4.00	>39.40
3-V-33	4867IV	185887	164.0	981	1	650	650	981	6.40	6.40	5.20
					2	231	881	331	10.80	5.50	9.00
					3	35	916	100	24.50	5.40	16.20
					4	31	947	65	29.50	5.30	20.30
					5	1	948	34	164.00	5.30	27.90
					6	6	954	33	67.00	5.30	28.30
					7	0	954	27	>164.00	5.30	31.20
					8	2	956	27	116.00	5.30	31.20
					9	0	956	25	>164.00	5.30	32.80
					10	0	956	25	>164.00	5.30	32.80
					>10	25	981	25	32.80	5.20	32.80
3-V-34	4867IV	188887	131.2	435	1	190	190	435	9.50	9.50	6.30
					2	128	318	245	11.60	7.40	8.40
					3	80	398	117	14.70	6.60	12.10
					4	20	418	37	29.40	6.40	21.60
					5	10	428	17	41.60	6.40	31.90
					6	4	432	7	65.60	6.30	49.70
					7	1	433	3	131.20	6.30	76.00
					8	2	435	2	92.80	6.30	92.80
					9	0	435	0	>131.20	6.30	>131.20
					10	0	435	0	>131.20	6.30	>131.20
					>10	0	435	0	>131.20	6.30	>131.20
3-V-35	4867IV	193891	196.8	826	1	450	450	826	9.30	9.30	6.70
					2	22	472	376	41.90	9.10	10.20
					3	248	720	354	12.50	7.30	10.50
					4	25	745	106	39.40	7.20	19.10
					5	10	755	81	56.90	7.20	21.90
					6	15	770	71	51.00	7.10	23.30
					7	13	783	56	54.60	7.00	26.30
					8	7	790	43	74.50	7.00	30.00
					9	7	797	36	74.50	7.00	32.60
					10	4	801	29	98.40	6.90	36.50
					>10	25	826	25	39.40	6.70	39.40
3-V-36	4867IV	228902	198.6	465	1	36	36	465	32.80	32.80	9.10
					2	324	360	429	13.20	10.40	9.50
					3	30	390	105	36.00	10.00	19.20
					4	29	419	75	36.60	9.60	22.70
					5	9	428	46	65.60	9.50	29.00
					6	11	439	37	59.40	9.40	32.40
					7	4	443	26	98.40	9.40	38.60
					8	6	449	22	80.10	9.30	42.00
					9	1	450	16	196.80	9.30	49.20
					10	3	453	15	113.50	9.20	51.00
					>10	12	465	12	56.90	9.10	56.90

(Continued)

Table A6 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
3-V-37	4867IV	105895	65.6	118	1	44	44	118	9.90	9.90	6.00
					2	31	75	74	11.80	7.60	7.60
					3	14	89	43	17.50	7.00	10.00
					4	11	100	29	19.80	6.60	12.20
					5	6	106	18	26.90	6.40	15.50
					6	8	114	12	23.30	6.20	18.90
					7	2	116	4	46.50	6.10	32.80
					8	1	117	2	65.60	6.10	46.50
					9	0	117	1	>65.60	6.10	65.60
					10	0	117	1	>65.60	6.10	65.60
					>10	1	118	1	65.60	6.00	65.60
3-V-38	4867IV	065908	98.4	922	1	618	618	922	4.00	4.00	3.20
					2	233	851	304	6.50	3.40	5.60
					3	24	875	71	20.10	3.30	11.60
					4	32	907	47	17.40	3.30	14.30
					5	10	917	15	31.10	3.30	25.30
					6	4	921	5	49.20	3.20	43.90
					7	0	921	1	>98.40	3.20	98.40
					8	0	921	1	>98.40	3.20	98.40
					9	0	921	1	>98.40	3.20	98.40
					10	0	921	1	>98.40	3.20	98.40
					>10	1	922	1	98.40	3.20	98.40
3-V-39	4867IV	064913	49.2	553	1	359	359	553	2.60	2.60	2.10
					2	129	488	194	4.30	2.20	3.50
					3	61	549	65	6.30	2.10	6.10
					4	1	550	4	49.20	2.10	24.70
					5	2	552	3	34.90	2.10	28.40
					6	1	553	1	49.20	2.10	49.20
					7	0	553	0	>49.20	2.10	>49.20
					8	0	553	0	>49.20	2.10	>49.20
					9	0	553	0	>49.20	2.10	>49.20
					10	0	553	0	>49.20	2.10	>49.20
					>10	0	553	0	>49.20	2.10	>49.20
3-V-40	4867IV	026922	65.6	133	1	66	66	133	8.10	8.10	5.70
					2	42	108	67	10.10	6.30	8.00
					3	17	125	25	15.90	5.90	13.10
					4	6	131	8	26.90	5.80	23.20
					5	1	132	2	65.60	5.80	46.50
					6	0	132	1	>65.60	5.80	65.60
					7	1	133	1	65.60	5.70	65.60
					8	0	133	0	>65.60	5.70	>65.60
					9	0	133	0	>65.60	5.70	>65.60
					10	0	133	0	>65.60	5.70	>65.60
					>10	0	133	0	>65.60	5.70	>65.60
3-V-41	4867IV	027923	65.6	310	1	84	84	310	7.20	7.20	3.70
					2	100	184	226	6.60	4.80	4.40
					3	44	228	126	9.90	4.40	5.80
					4	50	278	82	9.30	3.90	7.30
					5	29	307	32	12.20	3.70	11.40
					6	3	310	3	37.90	3.70	37.90
					7	0	310	0	>65.60	3.70	>65.60
					8	0	310	0	>65.60	3.70	>65.60
					9	0	310	0	>65.60	3.70	>65.60
					10	0	310	0	>65.60	3.70	>65.60
					>10	0	310	0	>65.60	3.70	>65.60
3-V-42	4867IV	123914	131.2	1173	1	947	947	1173	4.30	4.30	3.80
					2	127	1074	226	11.70	4.00	8.70
					3	48	1122	99	18.90	3.90	13.20
					4	14	1136	51	35.10	3.90	18.40
					5	8	1144	37	46.50	3.90	21.60
					6	18	1162	29	30.90	3.80	24.40
					7	8	1170	11	46.50	3.80	39.60
					8	1	1171	3	131.20	3.80	76.00
					9	1	1172	2	131.20	3.80	93.00
					10	0	1172	1	>131.20	3.80	131.20
					>10	1	1173	1	131.20	3.80	131.20
3-V-43	4866IV	098458	164.0	572	1	362	362	572	8.60	8.60	6.90
					2	71	433	210	19.50	7.90	11.20
					3	44	477	139	24.80	7.50	13.80
					4	43	520	95	25.00	7.20	16.70
					5	5	525	52	73.50	7.20	22.50
					6	29	554	47	30.50	7.00	23.80
					7	1	555	18	164.00	7.00	38.30
					8	1	556	17	164.00	7.00	39.40
					9	0	556	16	>164.00	7.00	41.00
					10	1	557	16	164.00	7.00	41.00
					>10	15	572	15	42.40	6.90	42.40

(Continued)

Table A6 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
3-V-44	4866IV	104459	65.6	294	1	179	179	294	4.90	4.90	3.80
					2	75	254	115	7.60	4.10	6.10
					3	18	272	40	15.50	4.00	10.40
					4	14	286	22	17.50	3.90	14.00
					5	3	289	8	37.90	3.90	23.20
					6	4	293	5	32.80	3.80	29.40
					7	0	293	1	>65.60	3.80	65.60
					8	0	293	1	>65.60	3.80	65.60
					9	0	293	1	>65.60	3.80	65.60
					10	0	293	1	>65.60	3.80	65.60
					>10	1	294	1	65.60	3.80	65.60
3-V-45	4866IV	117458	49.2	254	1	174	174	254	3.70	3.70	3.10
					2	59	233	80	6.40	3.20	5.50
					3	14	247	21	13.20	3.10	11.00
					4	4	251	7	24.60	3.10	18.60
					5	1	252	3	49.20	3.10	28.40
					6	2	254	2	34.90	3.10	34.90
					7	0	254	0	>49.20	3.10	>49.20
					8	0	254	0	>49.20	3.10	>49.20
					9	0	254	0	>49.20	3.10	>49.20
					10	0	254	0	>49.20	3.10	>49.20
					>10	0	254	0	>49.20	3.10	>49.20
3-V-46	4866IV	129459	65.6	268	1	123	123	268	5.90	5.90	4.00
					2	88	211	145	7.00	4.50	5.40
					3	[illegible]	235	57	13.40	4.30	8.70
					4	25	260	33	13.10	4.10	11.40
					5	1	261	8	65.60	4.10	23.20
					6	4	265	7	32.80	4.00	24.80
					7	3	268	3	37.90	4.00	37.90
					8	0	268	0	>65.60	4.00	>65.60
					9	0	268	0	>65.60	4.00	>65.60
					10	0	268	0	>65.60	4.00	>65.60
					>10	0	268	0	>65.60	4.00	>65.60
3-V-47	4867III	186688	49.2	223	1	136	136	223	4.20	4.20	3.30
					2	73	209	87	5.70	3.40	5.30
					3	9	218	14	16.40	3.30	13.10
					4	1	219	5	49.20	3.30	22.00
					5	2	221	4	34.90	3.30	24.60
					6	0	221	2	>49.20	3.30	34.90
					7	2	223	2	34.90	3.30	34.90
					8	0	223	2	>49.20	3.30	49.20
					9	0	223	2	>49.20	3.30	49.20
					10	0	223	2	>49.20	3.30	49.20
					>10	0	223	2	>49.20	3.30	49.20
3-V-48	4867III	199696	32.8	54	1	8	8	54	11.60	11.60	4.50
					2	38	46	46	5.30	4.80	4.80
					3	5	51	8	14.70	4.60	11.60
					4	3	54	3	19.00	4.50	19.00
					5	0	54	0	>32.80	4.50	>32.80
					6	0	54	0	>32.80	4.50	>32.80
					7	0	54	0	>32.80	4.50	>32.80
					8	0	54	0	>32.80	4.50	>32.80
					9	0	54	0	>32.80	4.50	>32.80
					10	0	54	0	>32.80	4.50	>32.80
					>10	0	54	0	>32.80	4.50	>32.80
3-V-49	4867III	251732	49.2	186	1	84	84	186	5.40	5.40	2.40
					2	63	147	102	6.20	2.70	4.90
					3	27	174	39	9.10	2.50	7.90
					4	9	183	12	16.40	2.40	14.20
					5	2	185	3	35.90	2.40	28.40
					6	0	185	1	>49.20	2.40	49.20
					7	1	186	1	49.20	2.40	49.20
					8	0	186	0	>49.20	2.40	>49.20
					9	0	186	0	>49.20	2.40	>49.20
					10	0	186	0	>49.20	2.40	>49.20
					>10	0	186	0	>49.20	2.40	>49.20
3-V-50	4767II	897689	65.6	416	1	290	290	416	3.90	3.90	3.20
					2	81	371	126	7.30	3.40	5.80
					3	17	388	45	15.90	3.30	9.80
					4	11	399	28	19.80	3.30	12.40
					5	9	408	17	21.90	3.30	15.90
					6	4	412	8	32.80	3.20	23.20
					7	2	414	4	46.50	3.20	32.80
					8	0	414	2	>65.60	3.20	46.50
					9	2	416	2	46.50	3.20	46.50
					10	0	416	0	>65.60	3.20	>65.60
					>10	0	416	0	>65.60	3.20	>65.60

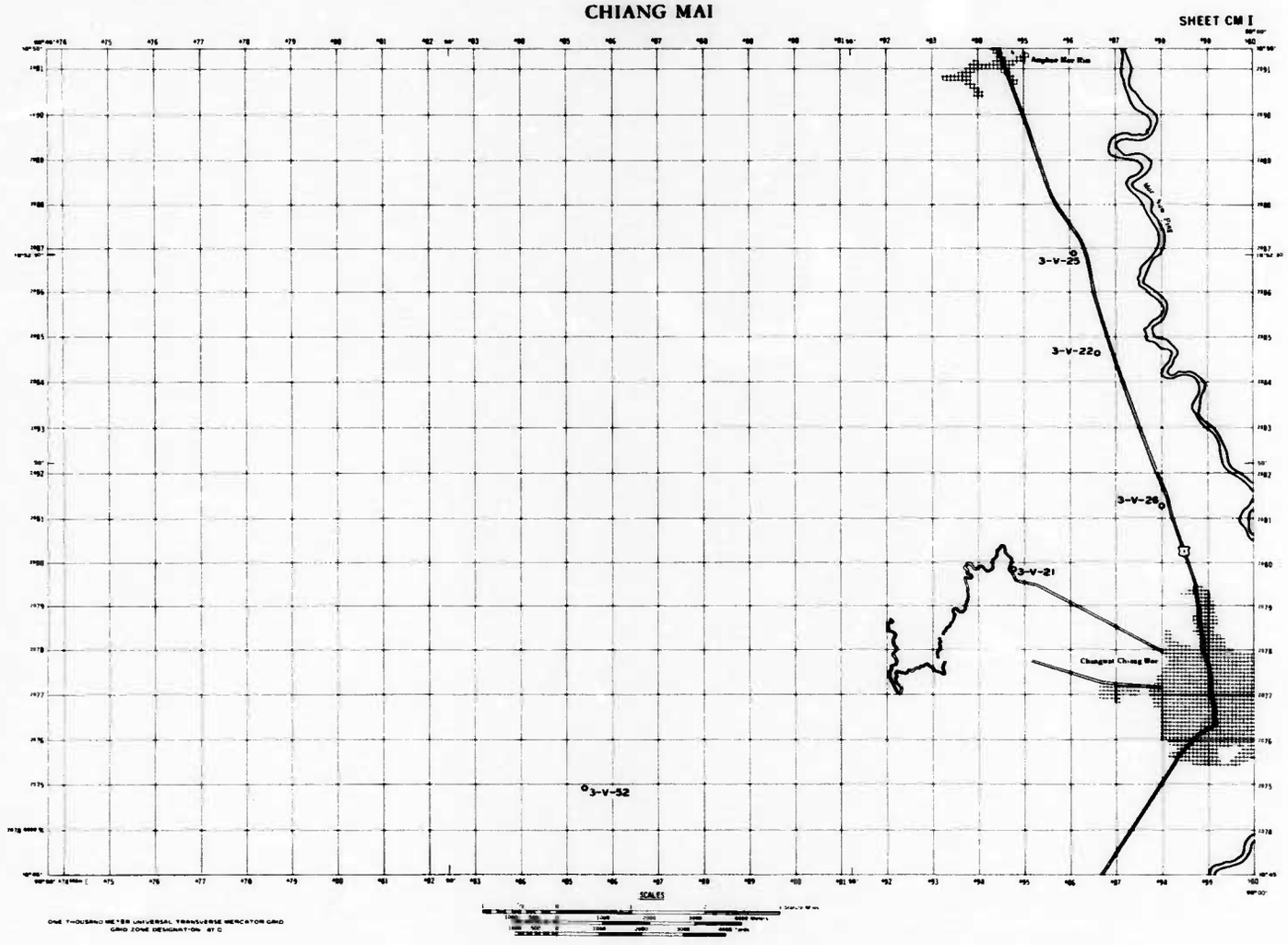
(Continued)

Table A6 (Concluded)

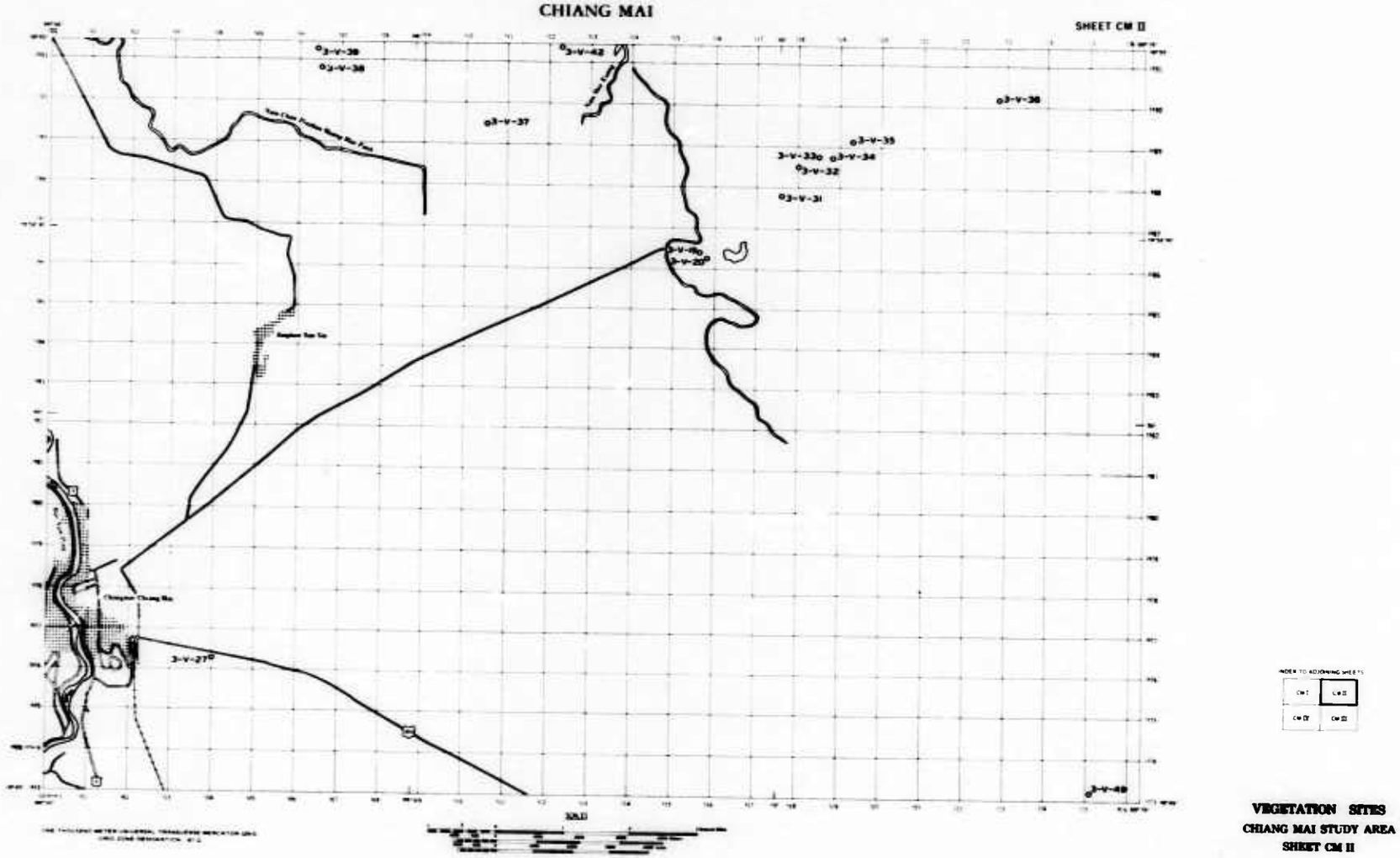
Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
3-V-51	4766I	847616	49.2	117	1	63	63	117	6.20	6.20	3.00
					2	21	84	54	10.70	3.60	6.70
					3	7	91	33	18.60	3.40	8.60
					4	12	103	26	14.20	3.20	9.70
					5	10	113	14	15.60	3.10	13.10
					6	2	115	4	34.90	3.10	24.60
					7	2	117	2	34.90	3.00	34.90
					8	0	117	0	>49.20	3.00	>49.20
					9	0	117	0	>49.20	3.00	>49.20
					10	0	117	0	>49.20	3.00	>49.20
					>10	0	117	0	>49.20	3.00	>49.20
3-V-52	4767II	854769	164.0	224	1	100	100	224	16.40	16.40	11.00
					2	25	125	124	32.80	14.70	14.60
					3	6	131	99	67.20	14.30	16.30
					4	22	153	93	35.00	13.30	16.90
					5	9	162	71	54.70	12.90	19.20
					6	17	179	62	39.80	12.30	20.60
					7	7	186	45	62.10	12.00	24.20
					8	4	190	38	82.00	11.90	26.30
					9	5	195	34	73.50	11.80	27.90
					10	3	198	29	94.80	11.70	30.10
					>10	26	224	26	32.20	11.00	32.20
3-V-53	4766I	816471	49.2	123	1	56	56	123	6.60	6.60	4.40
					2	54	110	67	6.70	4.70	6.00
					3	8	118	13	17.50	4.50	13.70
					4	5	123	5	22.00	4.40	22.00
					5	0	123	0	>49.20	4.40	>49.20
					6	0	123	0	>49.20	4.40	>49.20
					7	0	123	0	>49.20	4.40	>49.20
					8	0	123	0	>49.20	4.40	>49.20
					9	0	123	0	>49.20	4.40	>49.20
					10	0	123	0	>49.20	4.40	>49.20
					>10	0	123	0	>49.20	4.40	>49.20
3-V-54	4766I	783475	49.2	334	1	237	237	334	3.20	3.20	2.70
					2	86	323	97	5.30	2.70	5.00
					3	7	330	11	18.60	2.70	14.90
					4	3	333	4	28.40	2.70	24.60
					5	1	334	1	49.20	2.70	49.20
					6	0	334	0	>49.20	2.70	>49.20
					7	0	334	0	>49.20	2.70	>49.20
					8	0	334	0	>49.20	2.70	>49.20
					9	0	334	0	>49.20	2.70	>49.20
					10	0	334	0	>49.20	2.70	>49.20
					>10	0	334	0	>49.20	2.70	>49.20

(8 of 8 sheets)

FIG. A13

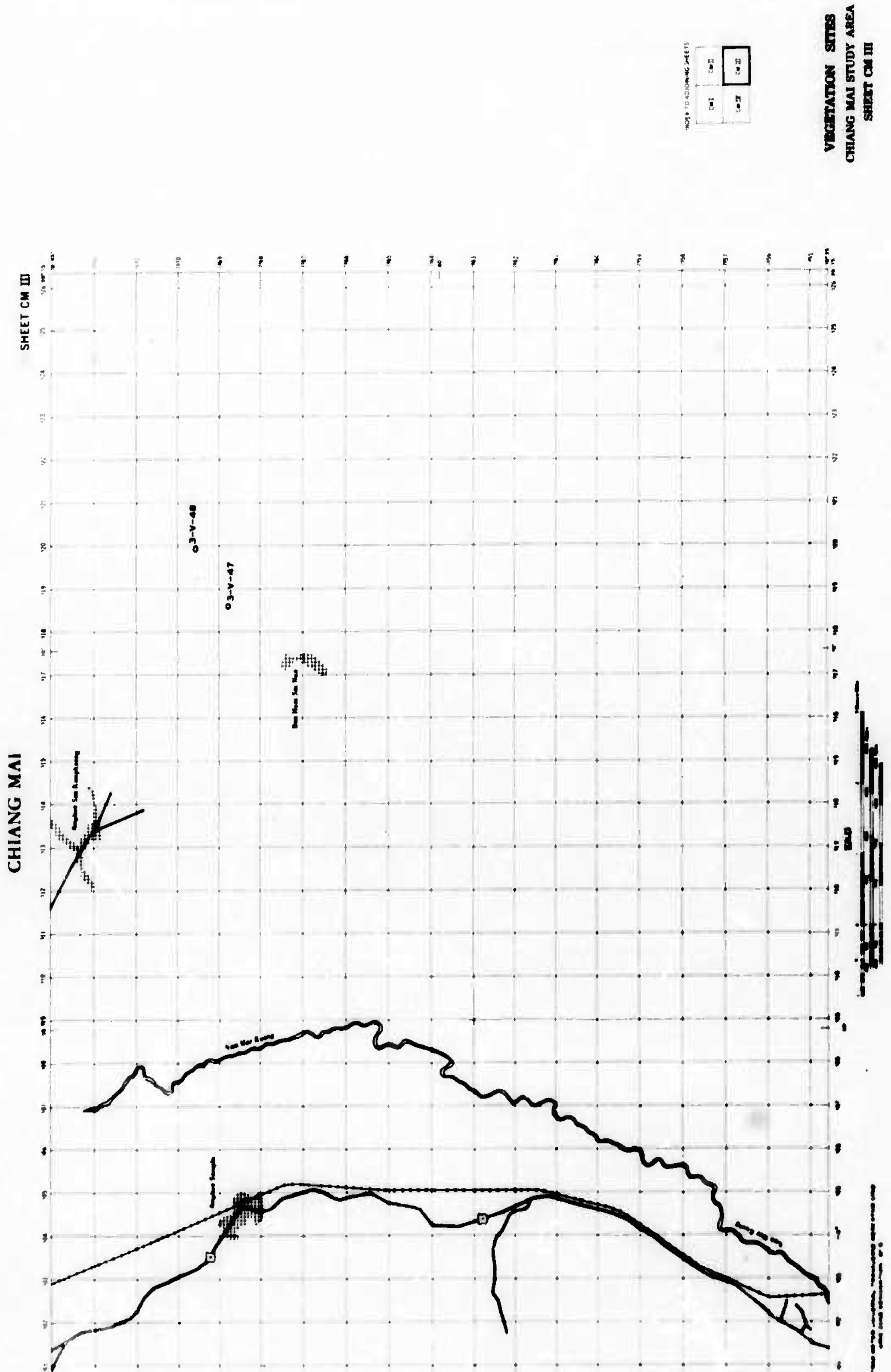


VEGETATION SITES
CHIANG MAI STUDY AREA
SHEET CM I



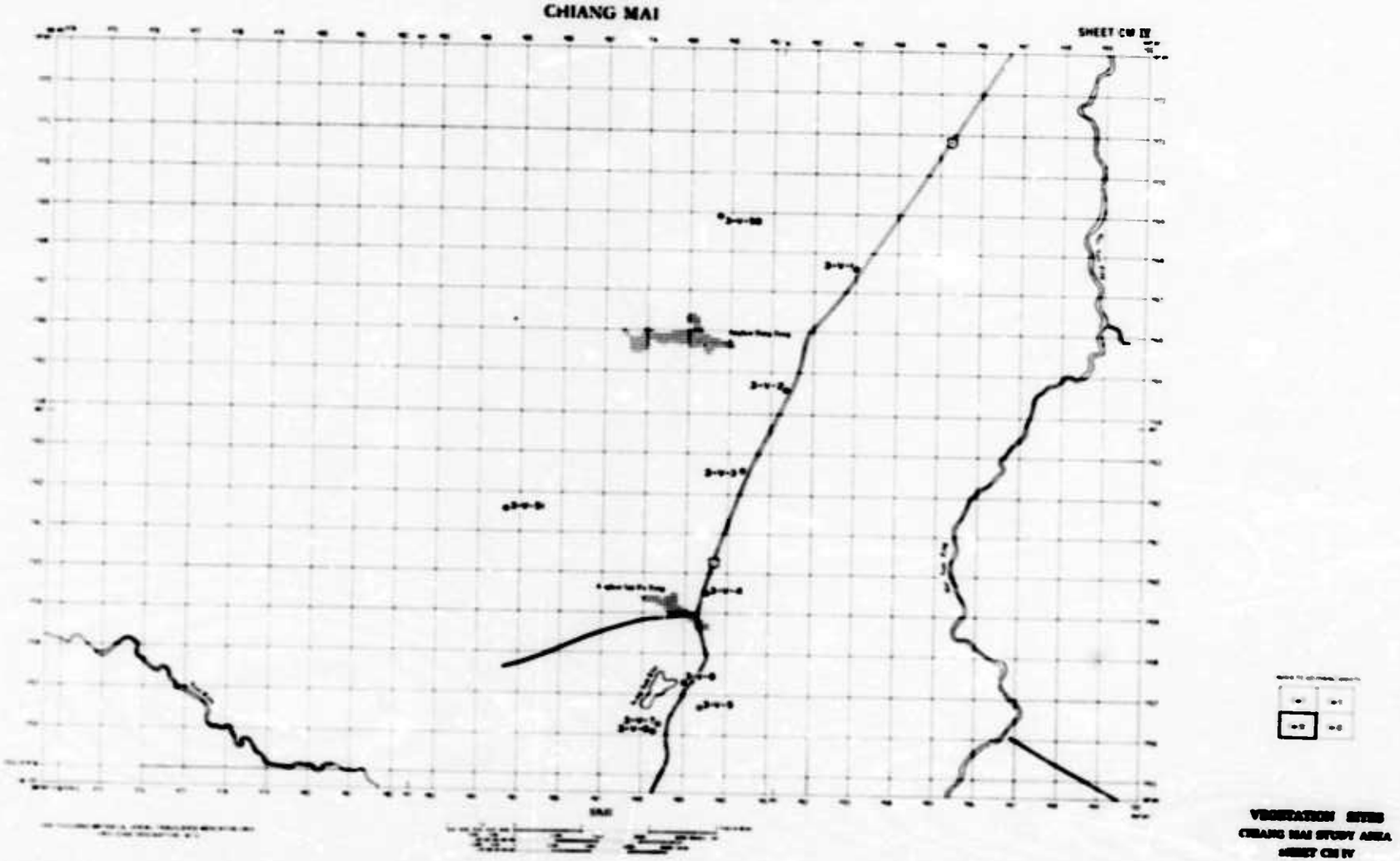
VEGETATION SITES
CHIANG MAI STUDY AREA
SHEET CM II

FIG. A12



CHIANG MAI
SHEET CM III
3-V-48
3-V-47
VEGETATION SITES
CHIANG MAI STUDY AREA
SHEET CM III

FIG. A14



VIBRATION SITES
CHIANG MAI STUDY AREA
SHEET CM IV

A13

FIG. A1.

PRAN BURI STUDY AREA

Table A7

Vegetation Site Summation

Pran Buri

Site No.	Location: Map Sheet*	Location: Grid Coordinates	Location: Fig. No.	Date Sampled
4-V-1	4948I	002878	A16	25 Mar 1965
4-V-2	4948I	993883	A16	24 Mar 1965
4-V-3	4948I	982884	A16	24 Mar 1965
4-V-4	4948I	003833	A16	25 Mar 1965
4-V-5	4948I	056831	A16	23 Mar 1965
4-V-6	4948I	063828	A16	23 Mar 1965
4-V-7	4948II	063796	A16	6 Apr 1965
4-V-8	4948II	985723	A17	7 Apr 1965
4-V-9	4948II	037737	A16	7 Apr 1965
4-V-10	4948II	057750	A16	7 Apr 1965
4-V-11	4948II	079650	A17	27 Mar 1965
4-V-12	4948II	085651	A17	27 Mar 1965
4-V-13	4948II	085640	A17	26 Mar 1965
4-V-14	4948II	045686	A17	26 Mar 1965
4-V-15	4947I	988608	A17	10 Apr 1965
4-V-16	4947I	072531	A18	13 Apr 1965
4-V-17	4947I	901460	A18	9 Apr 1965
4-V-18	4947I	900460	A18	9 Apr 1965
4-V-19	4947I	901464	A18	9 Apr 1965
4-V-20	4947II	907440	A18	14 Apr 1965
4-V-21	4947II	895425	A18	12 Apr 1965
4-V-22	4948II	939731	A16	8 Apr 1965
4-V-23	4948II	952743	A16	7 Apr 1965
4-V-24	4948II	904801	A16	8 Apr 1965
4-V-25	4948II	906740	A16	20 Apr 1965
4-V-28	4948II	922736	A16	27 Apr 1965
4-V-31	4948II	899744	A16	21 Apr 1965
4-V-33	4948II	899733	A16	21 Apr 1965
4-V-36	4947I	051534	A18	11 Apr 1965
4-V-37	4947I	066513	A18	13 Apr 1965
4-V-38	4947I	070505	A18	25 Apr 1965
4-V-39	4947I	051538	A18	22 Apr 1965
4-V-40	4947I	057524	A18	11 Apr 1965
4-V-42	4947I	062485	A18	25 Apr 1965
4-V-43	4947I	036560	A17	24 Apr 1965
4-V-44	4947I	035581	A17	24 Apr 1965
4-V-45	4947I	047608	A17	22 Apr 1965
4-V-47	4947I	041634	A17	29 Apr 1965
4-V-50	4947I	050594	A17	13 Apr 1965
4-V-51	4947I	978570	A17	23 Apr 1965
4-V-52	4947I	99 74	A17	23 Apr 1965
4-V-53	4947I	997577	A17	23 Apr 1965
4-V-54	4947I	995503	A18	28 Apr 1965
4-V-55	4947I	999501	A18	28 Apr 1965
4-V-56	4947I	993498	A18**	28 Apr 1965
4-V-57	4948II	828732	A16	26 Apr 1965
4-V-58	4948II	840743	A16	27 Apr 1965
4-V-59	4948II	853753	A16	26 Apr 1965
4-V-61	4947I	991508	A18	28 Apr 1965
4-V-62	4947I	981507	A18	28 Apr 1965

Note: Missing site numbers are the result of sites having been preselected and numbered but not sampled. Grid coordinates are set up according to Military Grid System. The first three numbers represent longitude, and the second three numbers represent latitude.

* AMS, L708, 1:50,000.

** All stems < 1 in.

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Table A8

Summary of Vegetation Field Data

Pran Buri

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter* (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
4-V-1	4948I	002878	32.80	51	1	31	31	51	5.90	5.90	4.60
					2	11	42	20	9.90	5.00	7.30
					3	5	47	9	14.70	4.80	10.90
					4	4	51	4	16.40	4.60	16.40
					5	0	51	0	>32.80	4.60	>32.80
					6	0	51	0	>32.80	4.60	>32.80
					7	0	51	0	>32.80	4.60	>32.80
					8	0	51	0	>32.80	4.60	>32.80
					9	0	51	0	>32.80	4.60	>32.80
					10	0	51	0	>32.80	4.60	>32.80
					>10	0	51	0	>32.80	4.60	>32.80
4-V-2	4948I	993883	26.20	36	1	25	25	36	5.20	5.20	4.40
					2	9	34	11	8.70	4.50	7.90
					3	1	35	2	26.20	4.40	18.50
					4	0	35	1	>26.20	4.40	26.20
					5	0	35	1	>26.20	4.40	26.20
					6	0	35	1	>26.20	4.40	26.20
					7	0	35	1	>26.20	4.40	26.20
					8	0	35	1	>26.20	4.40	26.20
					9	0	35	1	>26.20	4.40	26.20
					10	0	35	1	>26.20	4.40	26.20
					>10	1	36	1	26.20	4.40	26.20
4-V-3	4948I	982884	78.80	76	1	4	4	76	39.40	39.40	9.00
					2	32	36	72	13.90	13.10	9.30
					3	21	57	40	17.20	10.40	12.40
					4	11	68	19	23.80	9.60	18.10
					5	5	73	8	35.20	9.20	27.80
					6	2	75	3	55.70	9.10	45.50
					7	1	76	1	78.80	9.00	78.80
					8	0	76	0	>78.80	9.00	>78.80
					9	0	76	0	>78.80	9.00	>78.80
					10	0	76	0	>78.80	9.00	>78.80
					>10	0	76	0	>78.80	9.00	>78.80
4-V-4	4948I	003833	39.40	93	1	11	11	93	11.90	11.90	4.10
					2	65	76	82	4.90	4.50	4.40
					3	9	85	17	13.10	4.30	9.60
					4	6	91	8	16.10	4.10	13.90
					5	0	91	2	>39.40	4.10	27.80
					6	2	93	2	27.80	4.10	27.80
					7	0	93	0	>39.40	4.10	>39.40
					8	0	93	0	>39.40	4.10	>39.40
					9	0	93	0	>39.40	4.10	>39.40
					10	0	93	0	>39.40	4.10	>39.40
					>10	0	93	0	>39.40	4.10	>39.40
4-V-5	4948I	066831	78.80	29	1	0	0	29	>78.80	78.80	14.70
					2	2	2	29	55.60	55.60	14.70
					3	5	7	27	35.20	29.80	15.20
					4	5	12	22	35.20	22.80	16.80
					5	3	15	17	45.50	20.40	19.10
					6	3	18	14	45.50	18.60	21.00
					7	4	22	11	39.40	16.80	23.80
					8	2	24	7	55.60	16.10	29.80
					9	3	27	5	45.50	15.20	35.20
					10	0	27	2	>78.80		55.60
					>10	2	29	2	55.60	14.70	55.60
4-V-6	4948I	063828	32.80	22	1	0	0	22	>32.80	>32.80	>32.80
					2	0	0	22	>32.80	>32.80	>32.80
					3	0	0	22	>32.80	>32.80	>32.80
					4	1	1	22	32.80	32.80	21.00
					5	8	9	21	4.80	32.80	21.40
					6	9	18	13	32.80	23.20	27.30
					7	1	19	4	32.80	22.60	49.20
					8	2	21	3	69.60	21.40	[illegible]
					9	1	22	1	32.80	21.00	32.80
					10	0	22	0	>32.80	21.00	>32.80
					>10	0	22	0	>32.80	21.00	>32.80
4-V-7	4948II	063796	39.40	53	1	22	22	53	8.40	8.40	5.40
					2	14	36	31	10.50	6.57	7.08
					3	7	43	17	14.80	[illegible]	[illegible]
					4	6	49	10	16.10	5.63	12.30
					5	0	49	4	>39.70	5.42	19.70
					6	0	49	0	>39.40	5.42	>39.40
					7	0	49	0	>39.40	5.42	>39.40
					8	0	49	0	>39.40	5.42	>39.40
					9	0	49	0	>39.40	5.42	>39.40
					10	0	49	0	>39.40	5.42	>39.40
					>10	0	53	0	>39.40	5.42	>39.40

(Continued)

* Effective diameter includes clumps of stems that have been converted to a single diameter stem.

Table A8 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
4-V-8	4948II	985723	32.80	33	1	4	4	33	16.40	16.40	5.72
					2	16	20	29	8.20	7.34	6.09
					3	5	25	13	14.60	6.57	9.09
					4	6	31	8	13.80	5.89	11.60
					5	1	32	2	32.80	5.79	23.30
					6	1	33	1	32.80	5.72	32.80
					7	0	33	0	>32.80	5.72	>32.80
					8	0	33	0	>32.80	5.72	>32.80
					9	0	33	0	>32.80	5.72	>32.80
					10	0	33	0	>32.80	5.72	>32.80
					>10	0	33	0	>32.80	5.72	>32.80
4-V-9	4948II	037737	49.20	25	1	0	0	25	>49.20	>49.20	9.83
					2	6	6	25	20.30	20.30	9.83
					3	2	8	19	34.90	17.70	11.30
					4	11	19	17	14.80	11.30	11.90
					5	4	23	6	24.60	10.20	20.40
					6	2	25	2	34.90	9.83	34.90
					7	0	25	0	>49.20	9.83	>49.20
					8	0	25	0	>49.20	9.83	>49.20
					9	0	25	0	>49.20	9.83	>49.20
					10	0	25	0	>49.20	9.83	>49.20
					>10	0	25	0	>49.20	9.83	>49.20
4-V-10	4948II	057750	26.20	41	1	7	7	41	9.89	9.89	4.09
					2	15	22	34	6.77	5.59	4.49
					3	10	32	19	8.29	4.64	6.01
					4	9	41	9	8.73	4.09	8.73
					5	0	41	0	>26.20	4.09	>26.20
					6	0	41	0	>26.20	4.09	>26.20
					7	0	41	0	>26.20	4.09	>26.20
					8	0	41	0	>26.20	4.09	>26.20
					9	0	41	0	>26.20	4.09	>26.20
					10	0	41	0	>26.20	4.09	>26.20
					>10	0	41	0	>26.20	4.09	>26.20
4-V-11	4948II	079650	32.80	39	1	3	3	39	19.00	19.00	5.30
					2	21	24	36	7.20	6.70	5.50
					3	10	34	15	10.40	5.60	8.50
					4	3	37	5	19.00	5.40	14.70
					5	2	39	2	23.20	5.30	23.20
					6	0	39	0	>32.80	5.30	>32.80
					7	0	39	0	>32.80	5.30	>32.80
					8	0	39	0	>32.80	5.30	>32.80
					9	0	39	0	>32.80	5.30	>32.80
					10	0	39	0	>32.80	5.30	>32.80
					>10	0	39	0	>32.80	5.30	>32.80
4-V-12	4948II	085651	196.80	24	1	0	0	24	>196.80	>196.80	40.10
					2	0	0	24	>196.80	>196.80	40.10
					3	1	1	24	196.80	196.80	40.10
					4	1	2	23	196.80	139.00	41.00
					5	0	2	22	>196.80	139.00	42.00
					6	5	7	22	88.00	74.10	42.00
					7	2	9	17	139.20	65.50	47.60
					8	1	10	15	196.80	62.00	50.80
					9	4	14	14	98.40	52.50	52.50
					10	2	16	10	139.20	49.20	62.00
					>10	8	24	8	69.50	40.10	69.50
4-V-13	4948II	085640	98.40	638	1	294	294	638	5.70	5.70	3.90
					2	233	527	344	6.40	4.30	5.40
					3	72	599	111	11.60	4.00	9.30
					4	30	629	39	18.00	3.90	15.80
					5	2	631	9	49.20	3.90	32.80
					6	4	635	7	49.20	3.90	37.20
					7	2	637	3	69.60	3.90	56.80
					8	0	637	1	>98.40	3.90	98.40
					9	1	638	1	98.40	3.90	98.40
					10	0	638	0	>98.40	3.90	>98.40
					>10	0	638	0	>98.40	3.90	>98.40
4-V-14	4948II	045686	49.20	43	1	4	4	43	24.60	24.60	7.90
					2	19	23	39	11.30	10.20	7.90
					3	8	31	20	17.40	8.80	11.00
					4	8	39	12	17.40	7.90	14.20
					5	4	43	4	24.60	7.50	24.60
					6	0	43	0	>49.20	7.50	>49.20
					7	0	43	0	>49.20	7.50	>49.20
					8	0	43	0	>49.20	7.50	>49.20
					9	0	43	0	>49.20	7.50	>49.20
					10	0	43	0	>49.20	7.50	>49.20
					>10	0	43	0	>49.20	7.50	>49.20

(Continued)

Table A8 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems >1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
4-V-15	4947I	988608	39.40	72	1	39	39	72	6.32	6.32	4.64
					2	27	66	33	7.59	4.85	6.88
					3	2	68	6	27.90	4.78	16.10
					4	3	71	4	22.80	4.67	19.70
					5	1	72	1	39.40	4.64	39.40
					6	0	72	0	>39.40	4.64	>39.40
					7	0	72	0	>39.40	4.64	>39.40
					8	0	72	0	>39.40	4.64	>39.40
					9	0	72	0	>39.40	4.64	>39.40
					10	0	72	0	>39.40	4.64	>39.40
					>10	0	72	0	>39.40	4.64	>39.40
4-V-16	4947I	072531	26.20	36	1	5	5	36	11.70	11.70	4.37
					2	18	23	31	6.19	5.46	4.71
					3	7	30	13	9.89	4.77	7.26
					4	3	33	6	15.20	4.57	10.70
					5	1	34	3	26.20	4.49	15.20
					6	1	35	2	26.20	4.43	18.60
					7	0	35	1	>26.20	4.43	26.20
					8	1	36	1	26.20	4.37	26.20
					9	0	36	0	>26.20	4.37	>26.20
					10	0	36	0	>26.20	4.37	>26.20
					>10	0	36	0	>26.20	4.37	>26.20
4-V-17	4947I	901460	98.40	38	1	0	0	38	>98.40	>98.40	15.90
					2	3	3	38	56.80	56.80	15.90
					3	1	4	35	98.40	49.20	16.60
					4	2	6	34	69.70	40.10	16.90
					5	7	13	32	37.10	27.20	17.40
					6	19	32	25	22.60	17.40	19.70
					7	1	33	6	98.40	17.20	40.10
					8	1	34	5	98.40	16.90	43.90
					9	1	35	4	98.40	16.60	49.20
					10	2	37	3	69.70	16.20	56.80
					>10	1	38	1	98.40	15.90	98.40
4-V-18	4947I	900460	78.80	557	1	530	530	557	3.42	3.42	3.33
					2	6	536	27	35.00	3.40	15.40
					3	5	541	21	35.20	3.38	17.20
					4	0	541	16	>78.80	3.38	19.70
					5	0	541	16	>78.80	3.38	19.70
					6	1	542	16	78.80	3.38	19.70
					7	0	542	15	>78.80	3.38	20.40
					8	0	542	15	>78.80	3.38	20.40
					9	0	542	15	>78.80	3.38	20.40
					10	2	544	15	59.80	3.37	20.40
					>10	13	557	13	21.20	3.33	21.20
4-V-19	4947I	901464	65.60	32	1	0	9	32	>65.60	65.60	11.60
					2	5	5	32	29.30	29.30	11.60
					3	11	16	27	19.80	16.40	12.60
					4	0	16	16	>65.60	16.40	16.40
					5	0	16	16	>65.60	16.40	16.40
					6	0	16	16	>65.60	16.40	16.40
					7	0	16	16	>65.60	16.40	16.40
					8	0	16	16	>65.60	16.40	16.40
					9	0	16	16	>65.60	16.40	16.40
					10	0	16	16	>65.60	16.40	16.40
					>10	16	32	16	16.40	11.60	16.40
4-V-20	4947II	907440	65.60	32	1	1	1	32	65.60	65.60	11.60
					2	2	3	31	46.50	37.90	11.80
					3	1	4	29	65.60	32.80	12.20
					4	3	7	28	37.90	24.80	12.80
					5	1	8	25	65.60	23.20	13.10
					6	6	14	24	26.80	17.60	13.80
					7	6	20	18	26.80	14.70	15.50
					8	6	26	12	26.80	12.90	19.00
					9	0	26	6	>65.60	12.90	26.80
					10	0	26	6	>65.60	12.90	26.80
					>10	6	32	6	26.80	11.60	26.80
4-V-21	4947II	895425	78.80	40	1	0	0	40	>78.80	>78.80	12.50
					2	0	0	40	>78.80	>78.80	12.50
					3	2	2	40	55.90	56.00	12.50
					4	5	7	38	29.70	35.20	12.80
					5	10	17	33	24.90	19.10	13.70
					6	16	33	23	19.70	13.70	16.40
					7	4	37	7	39.40	13.00	29.70
					8	1	38	3	78.80	12.80	45.90
					9	1	39	2	78.80	12.60	55.90
					10	1	40	1	78.80	12.50	78.80
					>10	0	40	0	>78.80	12.50	>78.80

(Continued)

Table A8 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems >1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
4-V-22	4948II	939731	49.20	35	1	3	3	35	28.40	28.40	8.30
					2	1	4	32	49.20	24.60	8.69
					3	18	22	31	11.60	10.50	8.83
					4	4	26	13	24.60	9.65	13.60
					5	4	30	9	24.60	8.98	16.40
					6	3	33	5	28.40	8.58	21.90
					7	0	33	2	>49.20	8.58	34.40
					8	2	35	2	34.80	8.30	34.80
					9	0	35	0	>49.20	8.30	>49.20
					10	0	35	0	>49.20	8.30	>49.20
					>10	0	35	0	>49.20	8.30	>49.20
4-V-23	4948II	952743	65.60	28	1	0	0	28	>65.60	>65.60	12.40
					2	0	0	28	>65.60	>65.60	12.40
					3	3	3	28	37.90	37.90	12.40
					4	7	10	25	24.70	20.70	13.10
					5	3	13	18	37.90	18.20	15.80
					6	2	15	15	14.70	16.90	16.90
					7	3	18	13	37.90	15.50	18.00
					8	1	19	10	65.60	15.10	20.80
					9	1	20	9	65.60	14.70	21.90
					10	1	21	8	65.60	14.30	23.10
					>10	7	28	7	24.70	12.40	24.20
4-V-24	4948II	904801	19.68	33	1	9	9	33	6.56	6.56	3.43
					2	15	24	24	5.09	4.04	4.04
					3	6	30	9	8.03	3.59	6.56
					4	1	31	3	19.68	3.54	11.35
					5	0	31	2	>19.68	3.54	13.90
					6	2	33	2	13.90	3.43	13.90
					7	0	33	0	>19.68	3.43	>19.68
					8	0	33	0	>19.68	3.43	>19.68
					9	0	33	0	>19.68	3.43	>19.68
					10	0	33	0	>19.68	3.43	>19.68
					>10	0	33	0	>19.68	3.43	>19.68
4-V-25	4948II	906740	26.20	29	1	16	16	29	6.60	6.60	4.90
					2	10	26	13	8.30	5.10	7.30
					3	2	28	3	18.50	5.00	15.10
					4	1	29	1	26.20	4.90	26.20
					5	0	29	0	>26.20	4.90	>26.20
					6	0	29	0	>26.20	4.90	>26.20
					7	0	29	0	>26.20	4.90	>26.20
					8	0	29	0	>26.20	4.90	>26.20
					9	0	29	0	>26.20	4.90	>26.20
					10	0	29	0	>26.20	4.90	>26.20
					>10	0	29	0	>26.20	4.90	>26.20
4-V-28	4948II	922736	19.60	28	1	10	10	28	6.20	6.20	3.70
					2	16	26	18	4.90	3.80	4.60
					3	1	27	2	19.60	3.80	13.90
					4	1	28	1	19.60	3.70	19.60
					5	0	28	0	>19.60	3.70	>19.60
					6	0	28	0	>19.60	3.70	>19.60
					7	0	28	0	>19.60	3.70	>19.60
					8	0	28	0	>19.60	3.70	>19.60
					9	0	28	0	>19.60	3.70	>19.60
					10	0	28	0	>19.60	3.70	>19.60
					>10	0	28	0	>19.60	3.70	>19.60
4-V-31	4948II	899744	78.80	206	1	12	12	206	22.70	22.70	5.50
					2	81	93	194	8.80	8.20	5.70
					3	29	122	113	14.60	7.10	7.40
					4	15	137	84	20.40	6.70	8.60
					5	29	166	69	14.60	6.10	9.50
					6	25	191	40	15.80	5.70	12.50
					7	7	198	15	29.80	5.60	20.40
					8	4	202	8	39.40	5.50	27.90
					9	0	202	0	>78.80	5.50	>39.40
					10	2	204	4	55.70	5.50	39.40
					>10	2	206	2	55.70	5.50	55.70
4-V-33	4948II	899733	98.40	76	1	0	0	0	0	>98.40	>98.40
					2	5	5	76	44.00	44.00	11.30
					3	19	24	71	20.10	20.10	11.70
					4	12	36	52	28.40	16.40	13.60
					5	8	44	40	34.80	14.80	15.60
					6	8	52	32	34.80	13.60	17.40
					7	7	59	24	37.20	12.80	20.10
					8	5	64	17	44.00	12.30	23.90
					9	3	67	12	56.80	12.00	28.40
					10	1	68	9	98.40	11.90	32.80
					>10	8	76	8	34.80	11.30	34.80

(Continued)

Table A8 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems >1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
4-V-36	4947I	051534	26.20	65	1	27	27	65	5.04	5.04	3.25
					2	19	46	38	6.02	3.87	4.25
					3	5	51	19	11.70	3.67	6.02
					4	7	58	14	9.90	3.44	7.01
					5	4	62	7	13.10	3.33	9.90
					6	2	64	3	18.60	3.29	15.10
					7	1	65	1	26.20	3.25	26.20
					8	0	65	0	>26.20	3.25	>26.20
					9	0	65	0	>26.20	3.25	>26.20
					10	0	65	0	>26.20	3.25	>26.20
					>10	0	65	0	>26.20	3.25	>26.20
4-V-37	4947I	066513	164.00	39	1	0	0	39	>164.00	>164.00	26.30
					2	1	1	39	164.00	164.00	26.30
					3	1	2	38	164.00	116.10	26.60
					4	0	2	37	>164.00	116.10	27.00
					5	0	2	37	>164.00	116.10	27.00
					6	0	2	37	>164.00	116.10	27.00
					7	1	3	37	164.00	94.90	27.00
					8	1	4	36	164.00	82.00	27.30
					9	1	5	35	164.00	73.20	2.77
					10	0	5	34	>164.00	73.20	28.10
					>10	34	39	34	28.10	26.30	28.10
4-V-38	4947I	070505	19.60	25	1	13	13	25	5.40	5.40	3.90
					2	11	24	12	5.90	4.00	5.70
					3	1	25	1	19.60	3.90	19.60
					4	0	25	0	>19.60	3.90	>19.60
					5	0	25	0	>19.60	3.90	>19.60
					6	0	25	0	>19.60	3.90	>19.60
					7	0	25	0	>19.60	3.90	>19.60
					8	0	25	0	>19.60	3.90	>19.60
					9	0	25	0	>19.60	3.90	>19.60
					10	0	25	0	>19.60	3.90	>19.60
					>10	0	25	0	>19.60	3.90	>19.60
4-V-39	4947I	051538	39.40	50	1	3	3	50	22.70	22.70	5.60
					2	19	22	47	9.00	8.40	5.70
					3	11	33	28	11.90	6.90	7.40
					4	8	41	17	13.90	6.20	9.60
					5	7	48	9	14.90	5.70	13.10
					6	1	49	2	39.40	5.60	27.90
					7	0	49	1	>39.40	5.60	39.40
					8	0	49	1	>39.40	5.60	39.40
					9	1	50	1	39.40	5.60	39.40
					10	0	50	0	>39.40	5.60	>39.40
					>10	0	50	0	>39.40	5.60	>39.40
4-V-40	4947I	057524	32.80	33	1	1	1	33	32.80	32.80	5.72
					2	20	21	32	7.35	7.16	5.72
					3	5	26	12	14.60	6.44	9.48
					4	3	29	7	18.90	6.09	12.40
					5	3	32	4	18.90	5.80	16.40
					6	0	32	1	>32.80	5.80	32.80
					7	1	33	1	32.80	5.72	32.80
					8	0	33	0	>32.80	5.72	>32.80
					9	0	33	0	>32.80	5.72	>32.80
					10	0	33	0	>32.80	5.72	>32.80
					>10	0	33	0	>32.80	5.72	>32.80
4-V-42	4947I	062485	78.80	39	1	0	0	0	>78.80	>78.80	>12.70
					2	4	4	39	39.40	39.40	12.70
					3	6	10	35	32.20	24.90	13.30
					4	0	10	29	>78.80	24.90	14.70
					5	0	10	29	>78.80	24.90	14.70
					6	13	23	29	21.80	16.50	14.70
					7	2	25	16	55.60	15.80	19.70
					8	2	27	14	55.60	15.20	21.00
					9	4	31	12	39.40	14.10	22.70
					10	1	32	8	78.80	13.90	27.80
					>10	7	39	7	29.80	12.70	29.80
4-V-43	4947I	036560	46.00	87	1	5	5	87	22.00	22.00	5.30
					2	30	35	82	9.00	8.30	5.60
					3	22	57	52	10.50	6.50	6.80
					4	16	73	30	12.30	5.80	9.00
					5	3	76	14	28.40	5.60	13.20
					6	4	80	11	24.60	5.50	14.80
					7	4	84	7	24.60	5.40	19.60
					8	0	84	3	>49.20	5.40	28.40
					9	2	86	3	34.80	5.30	28.40
					10	1	87	1	49.20	5.30	49.20
					>10	0	87	0	>49.20	5.30	>49.20

(Continued)

Table A8 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
4-V-44	4947I	035581	19.60	66	1	9	9	66	6.50	6.50	2.40
					2	32	41	57	3.50	3.10	2.60
					3	7	48	25	7.40	2.80	3.90
					4	18	66	18	4.60	2.40	4.60
					5	0	66	0	>19.60	2.40	>19.60
					6	0	66	0	>19.60	2.40	>19.60
					7	0	66	0	>19.60	2.40	>19.60
					8	0	66	0	>19.60	2.40	>19.60
					9	0	66	0	>19.60	2.40	>19.60
					10	0	66	0	>19.60	2.40	>19.60
					>10	0	66	0	>19.60	2.40	>19.60
4-V-45	4947I	047608	26.20	54	1	25	25	54	5.20	5.20	3.60
					2	19	44	29	6.00	3.90	4.90
					3	4	48	10	13.10	3.80	8.30
					4	5	53	6	11.70	3.60	10.70
					5	1	54	1	26.20	3.60	26.20
					6	0	54	0	>26.20	3.60	>26.20
					7	0	54	0	>26.20	3.60	>26.20
					8	0	54	0	>26.20	3.60	>26.20
					9	0	54	0	>26.20	3.60	>26.20
					10	0	54	0	>26.20	3.60	>26.20
					>10	0	54	0	>26.20	3.60	>26.20
4-V-47	4947I	041634	26.20	34	1	2	2	34	18.50	18.40	4.50
					2	16	18	32	6.60	6.20	4.60
					3	8	26	16	9.30	5.10	6.60
					4	5	31	8	11.70	4.70	9.30
					5	1	32	3	26.20	4.60	15.10
					6	1	33	2	26.20	4.60	18.50
					7	0	33	1	>26.20	4.60	26.20
					8	1	34	1	26.20	4.50	26.20
					9	0	34	0	>26.20	4.50	>26.20
					10	0	34	0	>26.20	4.50	>26.20
					>10	0	34	0	>26.20	4.50	>26.20
4-V-50	4947I	050594	131.20	35	1	0	0	35	>131.20	>131.20	22.20
					2	3	3	35	76.00	76.00	22.20
					3	2	5	32	93.00	58.60	23.20
					4	3	8	30	76.00	46.40	23.00
					5	1	9	27	131.20	43.80	25.30
					6	4	13	26	65.60	36.10	25.80
					7	14	27	22	35.10	25.20	26.00
					8	3	30	8	76.00	43.90	46.40
					9	2	32	5	93.00	23.20	58.50
					10	0	32	3	>131.20	23.20	76.00
					>10	3	35	3	76.00	22.20	76.00
4-V-51	4947I	978570	131.20	17	1	0	17	17	>131.20	131.20	31.80
					2	0	17	17	>131.20	131.20	31.80
					3	0	17	17	>131.20	131.20	31.80
					4	0	17	17	>131.20	131.20	31.80
					5	0	17	17	>131.20	131.20	31.80
					6	0	17	17	>131.20	131.20	31.80
					7	0	17	17	>131.20	131.20	31.80
					8	0	17	17	>131.20	131.20	31.80
					9	0	17	17	>131.20	131.20	31.80
					10	0	17	17	>131.20	131.20	31.80
					>10	17	17	17	31.80	31.80	31.80
4-V-52	4947I	972574	78.80	25	1	0	0	25	>78.80	>78.80	15.80
					2	0	0	25	>78.80	>78.80	15.80
					3	0	0	25	>78.80	>78.80	15.80
					4	1	1	25	78.80	78.80	15.80
					5	0	1	24	>78.80	78.80	16.10
					6	3	4	24	45.50	32.40	16.10
					7	2	6	21	55.70	32.20	17.20
					8	2	8	19	55.70	27.90	18.10
					9	6	14	17	32.20	21.10	19.10
					10	4	18	11	39.40	19.60	23.70
					>10	7	25	7	29.10	15.10	29.10
4-V-53	4947I	977577	78.80	29	1	0	0	29	>78.80	78.80	14.20
					2	0	0	29	>78.80	78.80	14.20
					3	0	0	29	>78.80	78.80	14.20
					4	0	0	29	>78.80	78.80	14.20
					5	2	2	28	55.70	55.70	14.20
					6	1	3	27	78.80	45.50	15.40
					7	2	5	25	55.70	35.10	15.80
					8	4	9	23	39.40	26.20	16.40
					9	6	15	19	32.20	20.60	17.10
					10	2	17	13	55.70	19.10	21.20
					>10	11	28	11	23.10	14.20	23.10

(Continued)

Table A8 (Concluded)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems >1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
4-V-54	4947I	995503	6.50	22	1	22	22	22	1.40	1.40	1.40
					2	0	22	0	>6.50	1.40	>6.50
					3	0	22	0	>6.50	1.40	>6.50
					4	0	22	0	>6.50	1.40	>6.50
					5	0	22	0	>6.50	1.40	>6.50
					6	0	22	0	>6.50	1.40	>6.50
					7	0	22	0	>6.50	1.40	>6.50
					8	0	22	0	>6.50	1.40	>6.50
					9	0	22	0	>6.50	1.40	>6.50
					10	0	22	0	>6.50	1.40	>6.50
					>10	0	22	0	>6.50	1.40	>6.50
4-V-55	4947I	999501	2.60	22	1	22	22	22	0.60	0.60	0.60
					2	0	22	0	≥2.60	0.60	≥2.60
					3	0	22	0	≥2.60	0.60	≥2.60
					4	0	22	0	≥2.60	0.60	≥2.60
					5	0	22	0	≥2.60	0.60	≥2.60
					6	0	22	0	≥2.60	0.60	≥2.60
					7	0	22	0	≥2.60	0.60	≥2.60
					8	0	22	0	≥2.60	0.60	≥2.60
					9	0	22	0	≥2.60	0.60	≥2.60
					10	0	22	0	≥2.60	0.60	≥2.60
					>10	0	22	0	≥2.60	0.60	≥2.60
4-V-57	4948II	828732	65.60	121	1	56	56	121	8.80	8.80	5.90
					2	23	79	65	13.70	7.40	8.10
					3	18	97	42	15.50	6.70	10.10
					4	5	102	24	29.30	6.50	13.40
					5	2	104	19	46.40	6.40	15.10
					6	5	109	17	29.30	6.30	16.00
					7	1	110	12	65.60	6.30	18.90
					8	1	111	11	65.60	6.20	19.80
					9	3	114	10	37.90	6.10	20.70
					10	0	114	7	>65.60	6.10	24.80
					>10	7	121	7	24.80	5.90	24.80
4-V-58	4948II	840743	65.60	310	1	264	264	310	4.00	4.00	3.70
					2	9	273	46	21.90	3.90	9.70
					3	5	278	37	29.30	3.90	10.80
					4	4	282	32	32.80	3.70	11.60
					5	9	291	28	21.90	3.80	12.40
					6	7	298	19	24.80	3.80	15.10
					7	0	298	12	>65.60	3.80	18.90
					8	1	299	12	65.60	3.80	18.90
					9	2	301	11	46.40	3.80	19.80
					10	2	303	9	46.40	3.80	21.90
					>10	7	310	7	24.80	3.70	24.80
4-V-59	4948II	853753	78.80	254	1	189	189	254	5.70	5.70	4.90
					2	36	225	65	13.10	5.30	9.80
					3	1	226	29	78.80	5.30	14.60
					4	4	230	28	39.40	5.20	14.90
					5	3	233	24	45.50	5.20	16.10
					6	12	245	21	22.70	5.00	17.20
					7	2	247	9	55.70	5.00	26.30
					8	0	247	7	>78.80	5.00	29.80
					9	2	249	7	55.70	4.90	29.80
					10	0	249	5	>78.80	4.90	35.20
					>10	5	254	5	35.20	4.90	35.20
4-V-61	4947I	991508	0.90	20	1	20	20	20	0.20	0.20	0.20
					2	0	20	0	>0.90	0.20	>0.90
					3	0	20	0	>0.90	0.20	>0.90
					4	0	20	0	>0.90	0.20	>0.90
					5	0	20	0	>0.90	0.20	>0.90
					6	0	20	0	>0.90	0.20	>0.90
					7	0	20	0	>0.90	0.20	>0.90
					8	0	20	0	>0.90	0.20	>0.90
					9	0	20	0	>0.90	0.20	>0.90
					10	0	20	0	>0.90	0.20	>0.90
					>10	0	20	0	>0.90	0.20	>0.90
4-V-62	4947I	[illegible]	65.60	25	1	0	0	0	>65.60	>65.60	>13.10
					2	1	1	25	65.60	65.60	13.10
					3	0	1	24	>65.60	65.60	13.40
					4	0	1	24	>65.60	65.60	13.40
					5	1	2	24	65.60	46.40	13.40
					6	3	5	23	37.90	29.30	13.70
					7	7	12	20	24.80	18.90	14.70
					8	1	13	13	65.60	18.20	18.80
					9	7	20	12	24.80	14.70	18.90
					10	0	20	5	>65.60	14.70	29.30
					>10	5	25	5	29.30	13.10	29.30

(7 of 7 sheets)

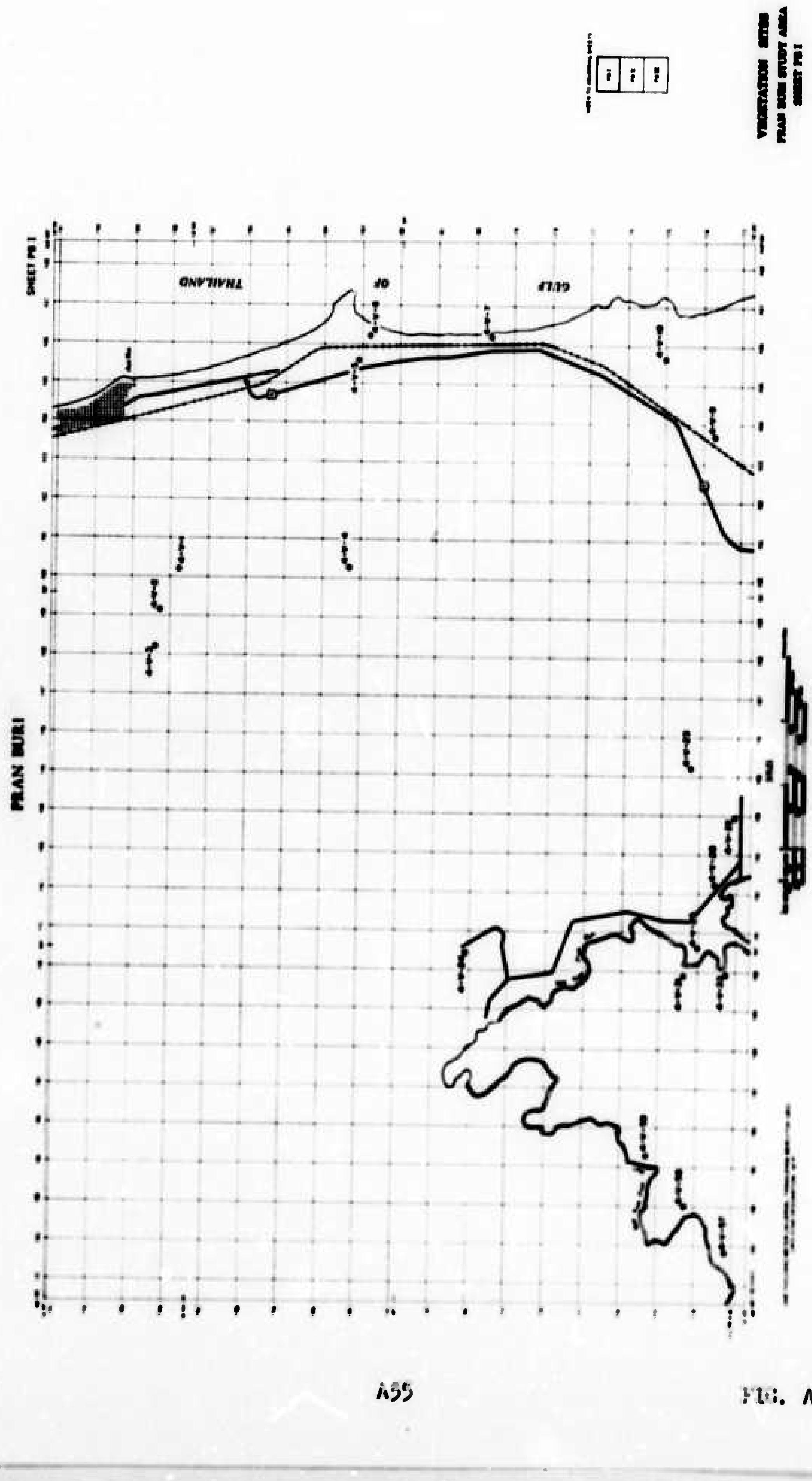

PRAN BURI
VEGETATION SITES
PRAN BURI STUDY AREA
SHEET PB 1
GULF
OF
THAILAND

FIG. A16

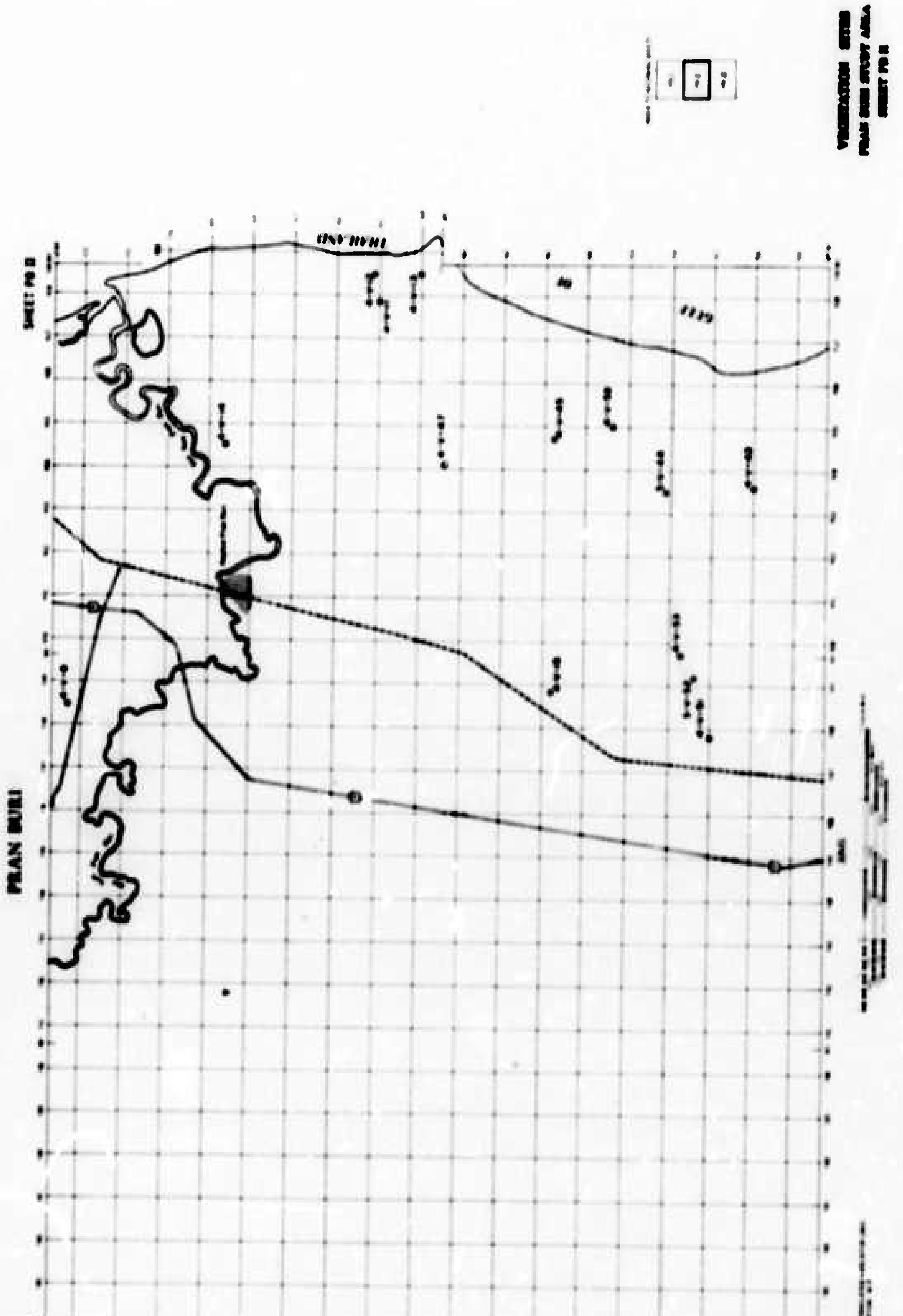
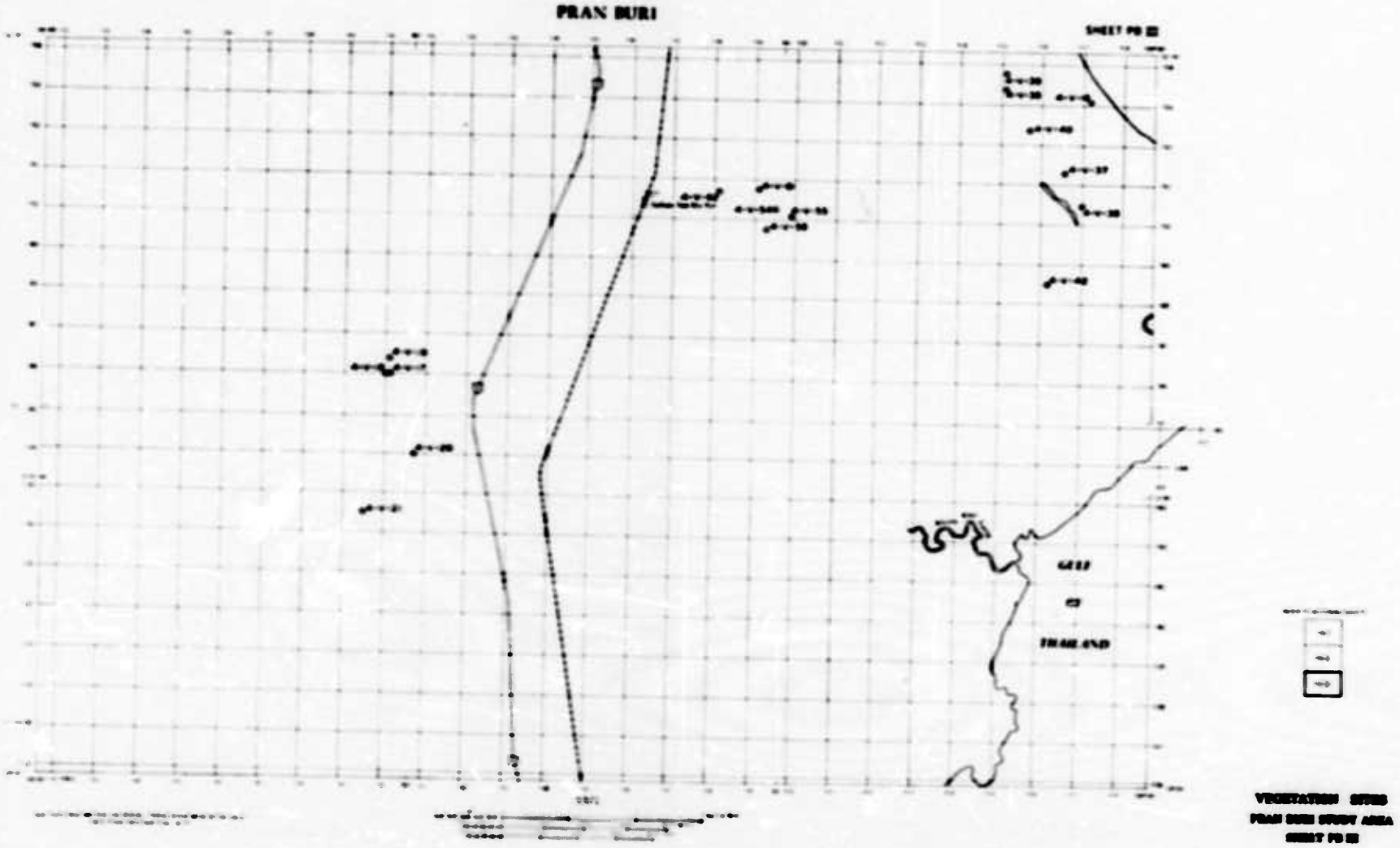


FIG. A17


PRAN BURI

KHON KAEN STUDY AREA

Table A9

Vegetation Site Summation

Khon Kaen

Site No.	Location: Map Sheet*	Location: Grid Coordinates	Location: Fig. No.	Date Sampled
5-V-1	5560IV	426337	**	11 Nov 1964
5-V-2	5560IV	422312	**	12 Nov 1964
5-V-3	5560III	410246	A19	12 Nov 1964
5-V-4	5560III	429230	A19	13 Nov 1964
5-V-5	5560III	440221	A19	14 Nov 1964
5-V-6	5560III	442227	A19	14 Nov 1964
5-V-7	5560II	683216	A20	15 Nov 1964
5-V-8	5560II	657253	A20	15 Nov 1964
5-V-9	5560III	571206	A20	16 Nov 1964
5-V-10	5560III	569211	A20	16 Nov 1964
5-V-11	5560II	679227	A20	17 Nov 1964
5-V-12	5560II	655233	A20	17 Nov 1964
5-V-13	5560II	643240	A20	17 Nov 1964
5-V-14	5560II	633248	A20	18 Nov 1964
5-V-15	5560I	683323	**	18 Nov 1964
5-V-16	5560I	679341	**	19 Nov 1964
5-V-17	5560II	686225	A20	19 Nov 1964
5-V-18	5660III	892189	A21	20 Nov 1964
5-V-19	5560II	823193	A21	20 Nov 1964
5-V-20	5560II	823194	A21	20 Nov 1964
5-V-21	5560II	658085	A20	21 Nov 1964
5-V-22	5560II	654071	A20	21 Nov 1964
5-V-23	5560II	709218	A20	27 Nov 1964
5-V-24	5560I	612278	**	28 Nov 1964
5-V-25	5560I	602266	**	28 Nov 1964
5-V-26	5560II	604200	A20	14 Dec 1964
5-V-27	5460I	239277	**	29 Nov 1964
5-V-28	5460I	241338	**	29 Nov 1964
5-V-29	5560I	704318	**	30 Nov 1964
5-V-30	5560I	673333	**	30 Nov 1964
5-V-31	5560I	677344	**	1 Dec 1964
5-V-32	5560I	675344	**	1 Dec 1964
5-V-33	5560II	818218	A21	2 Dec 1964
5-V-34	5560II	814198	A21	2 Dec 1964
5-V-35	5560II	809227	A21	3 Dec 1964
5-V-36	5560II	811237	A21	3 Dec 1964
5-V-37	5460I	116376	**	4 Dec 1964
5-V-38	5460I	132383	**	4 Dec 1964
5-V-39	5560I	820254	**	5 Dec 1964
5-V-40	5560II	728160	A20	6 Dec 1964
5-V-41	5660III	874199	A21	6 Dec 1964
5-V-42	5660III	898208	A21	6 Dec 1964
5-V-43	5460I	215344	**	7 Dec 1964
5-V-44	5460I	163392	**	8 Dec 1964
5-V-45	5660III	926225	A21	9 Dec 1964
5-V-46	5660III	905203	A21	13 Dec 1964
5-V-47	5660III	932094	A21	16 Dec 1964
5-V-48	5660III	945088	A21	16 Dec 1964
5-V-49	5560II	635202	A20	15 Dec 1964
5-V-50	5560II	614200	A20	15 Dec 1964
5-V-51	5560III	386207	A19	17 Dec 1964
5-V-52	5560III	387134	A19	18 Dec 1964
5-V-53	5560III	388132	A19	18 Dec 1964
5-V-54	5560III	358078	A19	19 Dec 1964
5-V-55	5560III	420218	A19	20 Dec 1964
5-V-56	5460II	267237	A19	20 Dec 1964
5-V-57	5560III	568137	A20	28 Dec 1964
5-V-58	5460II	230232	**	29 Dec 1964
5-V-59	5460II	210243	**	29 Dec 1964
5-V-60	5460II	181245	**	30 Dec 1964
5-V-61	5460II	188217	**	30 Dec 1964
5-V-62	5460II	170247	**	31 Dec 1964
5-V-63	5460II	276156	A19	31 Dec 1964
5-V-64	5460I	279344	**	2 Jan 1965
5-V-65	5660III	871170	A21	1 Jan 1965
5-V-66	5560II	796169	A21	1 Jan 1965
5-V-67	5461II	164456	**	2 Jan 1965
5-V-68	5560IV	517309	**	3 Jan 1965
5-V-69	5560IV	495323	**	3 Jan 1965
5-V-70	5560IV	492256	**	4 Jan 1965
5-V-71	5560IV	473271	**	4 Jan 1965
5-V-72	5660IV	899313	**	5 Jan 1965
5-V-73	5660IV	937301	**	6 Jan 1965
5-V-74	5560I	856297	**	6 Jan 1965
5-V-75	5560III	359239	A19	7 Jan 1965

Note: Grid coordinates are set up according to Military Grid System; the first three numbers represent longitude, and the second three numbers represent latitude.

* AMS, L708, 1:50,000.

** Site outside figure limits.

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Table A10

Summary of Vegetation Field Data

Khon Kaen

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter* (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
5-V-1	5560IV	426337	65.6	204	1	141	141	204	5.50	5.50	4.60
					2	25	166	63	13.10	5.10	8.30
					3	18	184	38	17.00	4.90	10.60
					4	9	193	20	21.90	4.70	14.70
					5	4	197	11	32.80	4.70	19.80
					6	5	202	7	29.40	4.60	24.80
					7	0	202	2	>65.60	4.60	46.40
					8	1	203	2	65.60	4.60	46.40
					9	1	204	1	65.60	4.60	65.60
					10	0	204	0	>65.60	4.60	>65.60
					>10	0	204	0	>65.60	4.60	>65.60
5-V-2	5560IV	422312	49.2	144	1	57	57	144	6.50	6.50	4.10
					2	45	102	87	7.40	4.90	5.30
					3	16	118	42	12.30	4.50	7.60
					4	15	133	26	12.70	4.30	9.70
					5	1	134	11	49.20	4.30	14.90
					6	7	141	10	18.60	4.20	15.60
					7	3	144	3	28.40	4.10	28.40
					8	0	144	0	>49.20	4.10	>49.20
					9	0	144	0	>49.20	4.10	>49.20
					10	0	144	0	>49.20	4.10	>49.20
					>10	0	144	0	>49.20	4.10	>49.20
5-V-3	5560III	410246	49.2	194	1	135	135	194	4.40	4.40	3.50
					2	48	183	59	7.10	3.60	6.40
					3	5	188	11	22.00	3.60	14.50
					4	4	192	6	24.60	3.50	20.10
					5	1	193	2	49.20	3.50	34.80
					6	0	193	1	>49.20	3.50	49.20
					7	0	193	1	>49.20	3.50	49.20
					8	0	193	1	>49.20	3.50	49.20
					9	0	193	1	>49.20	3.50	49.20
					10	0	193	1	>49.20	3.50	49.20
					>10	1	194	1	49.20	3.50	49.20
5-V-4	5560III	429230	49.2	148	1	73	73	148	5.80	5.80	4.00
					2	48	121	75	7.10	4.50	5.70
					3	12	133	27	14.20	4.30	9.50
					4	7	140	15	18.60	4.20	12.70
					5	1	141	8	49.20	4.10	17.40
					6	6	147	7	20.10	4.10	18.60
					7	0	147	1	>49.20	4.10	49.20
					8	1	148	1	49.20	4.00	49.20
					9	0	148	0	>49.20	4.00	>49.20
					10	0	148	0	>49.20	4.00	>49.20
					>10	0	148	0	>49.20	4.00	>49.20
5-V-5	5560III	440221	49.2	117	1	38	38	117	8.00	8.00	4.60
					2	61	99	79	6.30	4.90	5.60
					3	13	112	18	13.70	4.70	11.60
					4	4	116	5	24.60	4.60	22.00
					5	1	117	1	49.20	4.60	49.20
					6	0	117	0	>49.20	4.60	>49.20
					7	0	117	0	>49.20	4.60	>49.20
					8	0	117	0	>49.20	4.60	>49.20
					9	0	117	0	>49.20	4.60	>49.20
					10	0	117	0	>49.20	4.60	>49.20
					>10	0	117	0	>49.20	4.60	>49.20
5-V-6	5560III	442227	49.2	166	1	97	97	166	5.00	5.00	3.80
					2	33	130	69	8.60	4.30	5.90
					3	17	147	36	11.90	4.10	8.20
					4	11	158	19	14.90	3.90	11.40
					5	6	164	8	20.10	3.80	17.40
					6	2	166	2	34.80	3.80	34.80
					7	0	166	0	>49.20	3.80	>49.20
					8	0	166	0	>49.20	3.80	>49.20
					9	0	166	0	>49.20	3.80	>49.20
					10	0	166	0	>49.20	3.80	>49.20
					>10	0	166	0	>49.20	3.80	>49.20
5-V-7	5560II	683216	39.4	71	1	40	40	71	6.20	6.20	4.70
					2	26	66	31	7.70	4.90	7.10
					3	4	40	5	19.70	4.70	17.60
					4	1	71	1	39.40	4.70	39.40
					5	0	71	0	>39.40	4.70	>39.40
					6	0	71	0	>39.40	4.70	>39.40
					7	0	71	0	>39.40	4.70	>39.40
					8	0	71	0	>39.40	4.70	>39.40
					9	0	71	0	>39.40	4.70	>39.40
					10	0	71	0	>39.40	4.70	>39.40
					>10	0	71	0	>39.40	4.70	>39.40

* Effective diameter includes clumps of stems that have been converted to a single diameter stem.

(1 of 11 sheets)

Table A10 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (EMD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated EMD	Cumulative Stem Count for Diams > Stated EMD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated EMD	Stem Spacing, ft, for Diams > Stated EMD
5-V-8	5560II	657253	49.2	194	1	87	87	194	5.30	5.30	3.50
					2	100	187	107	4.90	3.60	4.80
					3	4	191	7	24.60	3.60	18.60
					4	2	193	3	34.80	3.50	28.40
					5	0	193	1	>49.20	3.50	49.20
					6	0	193	1	>49.20	3.50	49.20
					7	0	193	1	>49.20	3.50	49.20
					8	0	193	1	>49.20	3.50	49.20
					9	0	193	1	>49.20	3.50	49.20
					10	1	194	1	49.20	3.50	49.20
					>10	0	194	0	>49.20	3.50	>49.20
5-V-9	5560III	571206	32.8	106	1	79	79	106	3.70	3.70	3.20
					2	24	103	27	6.70	3.20	6.30
					3	3	106	3	18.90	3.20	18.90
					4	0	106	0	>32.80	3.20	>32.80
					5	0	106	0	>32.80	3.20	>32.80
					6	0	106	0	>32.80	3.20	>32.80
					7	0	106	0	>32.80	3.20	>32.80
					8	0	106	0	>32.80	3.20	>32.80
					9	0	106	0	>32.80	3.20	>32.80
					10	0	106	0	>32.80	3.20	>32.80
					>10	0	106	0	>32.80	3.20	>32.80
5-V-10	5560III	569211	32.8	105	1	74	74	105	3.90	3.90	3.20
					2	29	103	31	6.10	3.20	5.90
					3	0	103	31	>32.80	3.20	23.20
					4	2	105	2	23.20	3.20	23.20
					5	0	105	0	>32.80	3.20	>32.80
					6	0	105	0	>32.80	3.20	>32.80
					7	0	105	0	>32.80	3.20	>32.80
					8	0	105	0	>32.80	3.20	>32.80
					9	0	105	0	>32.80	3.20	>32.80
					10	0	105	0	>32.80	3.20	>32.80
					>10	0	105	0	>32.80	3.20	>32.80
5-V-11	5560II	679227	49.2	257	1	154	154	257	4.00	4.00	3.10
					2	91	245	103	5.20	3.10	4.90
					3	11	256	12	14.90	3.10	14.20
					4	1	257	1	49.20	3.10	49.20
					5	0	257	0	>49.20	3.10	>49.20
					6	0	257	0	>49.20	3.10	>49.20
					7	0	257	0	>49.20	3.10	>49.20
					8	0	257	0	>49.20	3.10	>49.20
					9	0	257	0	>49.20	3.10	>49.20
					10	0	257	0	>49.20	3.10	>49.20
					>10	0	257	0	>49.20	3.10	>49.20
5-V-12	5560II	655233	49.2	128	1	80	80	128	5.50	5.50	4.40
					2	42	122	48	7.60	4.50	7.10
					3	4	126	6	24.60	4.40	20.10
					4	1	127	2	49.20	4.40	34.80
					5	0	127	1	>49.20	4.40	49.20
					6	1	128	1	49.20	4.40	49.20
					7	0	128	0	>49.20	4.40	>49.20
					8	0	128	0	>49.20	4.40	>49.20
					9	0	128	0	>49.20	4.40	>49.20
					10	0	128	0	>49.20	4.40	>49.20
					>10	0	128	0	>49.20	4.40	>49.20
5-V-13	5560II	643240	49.2	97	1	30	30	97	9.00	9.00	9.00
					2	38	68	67	8.00	6.00	6.00
					3	16	84	29	12.30	5.40	9.10
					4	13	97	13	13.70	5.00	13.70
					5	0	97	0	>49.20	5.00	>49.20
					6	0	97	0	>49.20	5.00	>49.20
					7	0	97	0	>49.20	5.00	>49.20
					8	0	97	0	>49.20	5.00	>49.20
					9	0	97	0	>49.20	5.00	>49.20
					10	0	97	0	>49.20	5.00	>49.20
					>10	0	97	0	>49.20	5.00	>49.20
5-V-14	5560II	633248	32.8	74	1	49	49	74	4.70	4.70	3.80
					2	21	70	25	7.20	3.90	6.60
					3	4	74	4	16.40	3.80	16.40
					4	0	74	0	>32.80	3.80	>32.80
					5	0	74	0	>32.80	3.80	>32.80
					6	0	74	0	>32.80	3.80	>32.80
					7	0	74	0	>32.80	3.80	>32.80
					8	0	74	0	>32.80	3.80	>32.80
					9	0	74	0	>32.80	3.80	>32.80
					10	0	74	0	>32.80	3.80	>32.80
					>10	0	74	0	>32.80	3.80	>32.80

(Continued)

Table A10 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams > Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams > Stated ESD
5-V-15	5560I	683323	32.8	92	1	45	45	92	4.90	4.90	3.40
					2	34	79	47	5.60	3.70	4.80
					3	6	85	13	13.50	3.60	9.10
					4	5	90	7	14.70	3.50	12.40
					5	1	91	2	32.80	3.40	23.20
					6	0	91	1	>32.80	3.40	32.80
					7	0	91	1	>32.80	3.40	32.80
					8	0	91	1	>32.80	3.40	32.80
					9	0	91	1	>32.80	3.40	32.80
					10	1	92	1	32.80	3.40	32.80
					>10	0	92	0	>32.80	3.40	>32.80
5-V-16	5560I	679341	49.2	116	1	33	33	116	8.60	8.60	7.60
					2	44	77	83	7.40	5.60	5.40
					3	12	89	39	14.20	5.20	7.90
					4	14	103	27	13.20	4.90	9.50
					5	2	105	13	34.80	4.80	13.70
					6	8	113	11	17.40	4.60	14.90
					7	1	114	3	49.20	4.60	28.40
					8	1	115	2	49.20	4.60	34.80
					9	1	116	1	49.20	4.60	49.20
					10	0	116	0	>49.20	4.60	>49.20
					>10	0	116	0	>49.20	4.60	>49.20
5-V-17	5560II	686225	39.4	83	1	49	49	83	5.60	5.60	4.30
					2	28	77	34	7.30	4.50	6.80
					3	4	81	6	19.70	4.40	16.10
					4	2	83	2	27.80	4.30	27.80
					5	0	83	0	>39.40	4.30	>39.40
					6	0	83	0	>39.40	4.30	>39.40
					7	0	83	0	>39.40	4.30	>39.40
					8	0	83	0	>39.40	4.30	>39.40
					9	0	83	0	>39.40	4.30	>39.40
					10	0	83	0	>39.40	4.30	>39.40
					>10	0	83	0	>39.40	4.30	>39.40
5-V-18	5660III	892189	26.2	45	1	11	11	45	7.90	7.90	3.90
					2	17	28	34	6.40	5.00	4.50
					3	11	39	17	7.90	4.20	6.40
					4	6	45	6	10.70	3.90	10.70
					5	0	45	0	>26.20	3.90	>26.20
					6	0	45	0	>26.20	3.90	>26.20
					7	0	45	0	>26.20	3.90	>26.20
					8	0	45	0	>26.20	3.90	>26.20
					9	0	45	0	>26.20	3.90	>26.20
					10	0	45	0	>26.20	3.90	>26.20
					>10	0	45	0	>26.20	3.90	>26.20
5-V-19	5660II	823193	65.6	25	1	0	0	25	>65.60	>65.60	13.10
					2	0	0	25	>65.60	>65.60	13.10
					3	0	0	25	>65.60	>65.60	13.10
					4	0	0	25	>65.60	>65.60	13.10
					5	0	0	25	>65.60	>65.60	13.10
					6	0	0	25	>65.60	>65.60	13.10
					7	0	0	25	>65.60	>65.60	13.10
					8	0	0	25	>65.60	>65.60	13.10
					9	0	0	25	>65.60	>65.60	13.10
					10	3	3	25	38.00	38.60	13.10
					>10	22	25	22	14.00	13.10	14.00
5-V-20	5560II	823194	32.8	26	1	3	3	26	19.00	19.00	6.40
					2	4	7	23	16.40	12.40	6.80
					3	4	11	19	16.40	9.90	7.50
					4	8	19	15	11.60	7.50	8.50
					5	7	26	7	12.40	6.40	12.40
					6	0	26	0	>32.80	6.40	>32.80
					7	0	26	0	>32.80	6.40	>32.80
					8	0	26	0	>32.80	6.40	>32.80
					9	0	26	0	>32.80	6.40	>32.80
					10	0	26	0	>32.80	6.40	>32.80
					>10	0	26	0	>32.80	6.40	>32.80
5-V-21	5560II	658085	65.6	31	1	1	1	31	65.60	65.60	11.80
					2	0	1	30	>65.60	65.60	12.00
					3	0	1	30	>65.60	65.60	12.00
					4	1	2	30	65.60	46.40	12.00
					5	10	12	29	20.80	19.00	12.20
					6	6	18	19	26.80	15.50	15.10
					7	9	27	13	21.90	12.60	18.20
					8	1	28	4	65.60	12.40	32.80
					9	3	31	3	37.90	11.80	37.90
					10	0	31	0	>65.60	11.80	>65.60
					>10	0	31	0	>65.60	11.80	>65.60

(Continued)

Table A10 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams > Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams > Stated ESD
5-V-22	5560II	654071	65.6	27	1	0	0	27	>65.60	>65.60	12.60
					2	1	1	27	65.60	65.60	12.60
					3	1	2	26	65.60	46.40	12.90
					4	1	3	25	65.60	37.90	13.10
					5	6	9	24	26.80	21.90	13.40
					6	14	23	18	17.60	13.70	15.40
					7	2	25	4	46.40	13.10	32.80
					8	1	26	2	65.60	12.60	46.40
					9	1	27	1	65.60	12.60	65.60
					10	0	27	0	>65.60	12.60	>65.60
					>10	0	27	0	>65.60	12.60	>65.60
5-V-23	5560II	709218	49.2	71	1	27	27	71	9.50	9.50	5.80
					2	29	56	44	9.10	6.60	7.40
					3	9	65	15	16.40	6.10	12.70
					4	6	71	6	20.00	5.80	20.00
					5	0	71	0	>49.20	5.80	>49.20
					6	0	71	0	>49.20	5.80	>49.20
					7	0	71	0	>49.20	5.80	>49.20
					8	0	71	0	>49.20	5.80	>49.20
					9	0	71	0	>49.20	5.80	>49.20
					10	0	71	0	>49.20	5.80	>49.20
					>10	0	71	0	>49.20	5.80	>49.20
5-V-24	5560I	612278	39.4	71	1	37	37	71	6.50	6.50	4.70
					2	20	57	34	8.80	5.20	6.80
					3	8	65	14	16.10	4.90	10.50
					4	4	69	6	19.70	4.80	16.10
					5	0	69	2	>39.40	4.80	27.80
					6	2	71	2	27.80	4.70	27.80
					7	0	71	0	>39.40	4.70	>39.40
					8	0	71	0	>39.40	4.70	>39.40
					9	0	71	0	>39.40	4.70	>39.40
					10	0	71	0	>39.40	4.70	>39.40
					>10	0	71	0	>39.40	4.70	>39.40
5-V-25	5560I	602266	78.8	256	1	102	102	256	7.80	7.80	4.90
					2	117	219	154	7.30	5.30	6.30
					3	9	228	37	29.30	5.20	13.00
					4	21	249	28	17.20	5.00	14.90
					5	4	253	7	39.40	5.00	29.80
					6	3	256	3	45.50	4.90	46.50
					7	0	256	0	>78.80	4.90	>78.80
					8	0	256	0	>78.80	4.90	>78.80
					9	0	256	0	>78.80	4.90	>78.80
					10	0	256	0	>78.80	4.90	>78.80
					>10	0	256	0	>78.80	4.90	>78.80
5-V-26	5560II	604200	65.6	110	1	10	10	110	20.80	20.80	6.30
					2	38	48	100	10.60	9.50	6.60
					3	21	69	62	14.40	7.90	8.30
					4	24	93	41	13.40	6.80	10.20
					5	9	102	17	21.90	6.50	15.90
					6	5	107	8	29.40	6.40	23.20
					7	1	108	3	65.60	6.30	38.00
					8	0	108	2	>65.60	6.30	46.40
					9	0	108	2	>65.60	6.30	46.40
					10	2	110	2	46.40	6.30	46.40
					>10	0	110	0	>65.60	6.30	>65.60
5-V-27	5460I	239277	19.7	10	1	8	8	10	7.00	7.00	6.20
					2	2	10	2	13.90	6.20	13.90
					3	0	10	0	>19.70	6.20	>19.70
					4	0	10	0	>19.70	6.20	>19.70
					5	0	10	0	>19.70	6.20	>19.70
					6	0	10	0	>19.70	6.20	>19.70
					7	0	10	0	>19.70	6.20	>19.70
					8	0	10	0	>19.70	6.20	>19.70
					9	0	10	0	>19.70	6.20	>19.70
					10	0	10	0	>19.70	6.20	>19.70
					>10	0	10	0	>19.70	6.20	>19.70
5-V-28	5560I	241338	196.8	1358	1	763	763	1358	7.10	7.10	5.30
					2	500	1263	595	8.80	5.50	8.10
					3	19	1282	95	45.40	5.50	20.20
					4	9	1291	76	65.60	5.50	22.60
					5	8	1299	67	69.90	5.50	24.00
					6	5	1304	59	88.00	5.40	25.60
					7	12	1316	54	56.80	5.40	26.80
					8	6	1322	42	80.30	5.40	30.40
					9	10	1332	36	62.40	5.40	32.80
					10	9	1341	26	65.60	5.40	38.60
					>10	17	1358	17	46.50	5.30	46.50

(Continued)

Table A10 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
5-V-29	5560I	704318	78.8	240	1	124	124	240	7.10	7.10	5.10
					2	82	206	116	8.70	5.50	7.30
					3	12	218	34	22.80	5.30	13.90
					4	15	233	22	20.40	5.20	16.80
					5	0	233	7	>78.80	5.20	29.80
					6	2	235	7	55.60	5.10	29.80
					7	1	236	5	78.80	5.10	35.20
					8	1	237	4	78.80	5.10	39.40
					9	3	240	3	45.50	5.10	45.50
					10	0	240	0	>78.80	5.10	>78.80
					>10	0	240	0	>78.80	5.10	>78.80
5-V-30	5560I	673333	39.4	48	1	7	7	48	14.90	14.90	5.70
					2	25	32	41	7.90	7.00	6.20
					3	10	42	16	12.50	6.10	9.90
					4	2	44	6	27.80	5.90	16.10
					5	3	47	4	22.80	5.80	19.70
					6	0	47	1	>39.40	5.80	39.40
					7	0	47	1	>39.40	5.80	39.40
					8	0	47	1	>39.40	5.80	39.40
					9	0	47	1	>39.40	5.80	39.40
					10	1	48	1	39.40	5.70	39.40
					>10	0	48	0	>39.40	5.70	>39.40
5-V-31	5560I	677344	78.8	396	1	88	88	396	8.40	8.40	4.00
					2	225	313	308	5.30	4.50	4.50
					3	37	350	83	12.90	4.20	8.60
					4	25	375	46	15.80	4.10	11.60
					5	5	380	21	35.20	4.00	17.20
					6	10	390	16	24.90	4.00	19.70
					7	4	394	6	39.40	4.00	32.20
					8	0	394	2	>78.80	4.00	55.60
					9	1	395	2	78.80	4.00	55.60
					10	1	395	1	78.80	4.00	78.80
					>10	1	396	1	78.80	4.00	78.80
5-V-32	5560I	675344	78.8	245	1	58	58	245	10.30	10.30	5.00
					2	134	192	187	6.80	5.70	5.80
					3	26	218	53	15.50	5.30	10.80
					4	12	230	27	22.80	5.20	15.20
					5	9	239	15	26.30	5.10	20.20
					6	4	243	6	39.40	5.10	32.20
					7	1	244	2	78.80	5.00	55.60
					8	0	244	2	>78.80	5.00	78.80
					9	1	245	1	78.80	5.00	78.80
					10	0	245	1	>78.80	5.00	78.80
					>10	0	245	1	>78.80	5.00	78.80
5-V-33	5560II	818218	164.0	229	1	22	22	229	35.00	35.00	10.90
					2	100	122	207	16.40	14.90	11.40
					3	48	170	107	23.80	12.60	15.80
					4	17	187	59	39.80	12.00	24.60
					5	0	187	42	>164.00	12.00	25.40
					6	5	192	42	73.50	11.80	25.40
					7	10	202	37	51.90	11.50	27.00
					8	0	202	27	>164.00	12.00	31.60
					9	1	203	27	164.00	11.50	31.60
					10	1	204	26	164.00	11.50	32.20
					>10	25	229	25	32.80	10.90	32.80
5-V-34	5560II	814198	49.2	98	1	70	70	98	5.50	5.50	5.00
					2	24	94	28	10.10	5.10	9.30
					3	0	94	4	>49.20	5.10	24.60
					4	1	95	4	49.20	5.10	24.60
					5	1	96	3	49.20	5.00	28.40
					6	0	96	2	>49.20	5.00	34.80
					7	1	97	2	49.20	5.00	34.80
					8	0	97	1	>49.20	5.00	49.20
					9	0	97	1	>49.20	5.00	49.20
					10	1	98	1	49.20	5.00	49.20
					>10	0	98	0	>49.20	5.00	0
5-V-35	5560II	809227	196.8	318	1	144	144	318	16.40	16.40	11.00
					2	45	189	174	29.40	14.30	14.90
					3	0	189	129	>29.40	14.30	17.30
					4	9	198	129	65.60	14.00	17.30
					5	36	234	120	32.80	12.90	18.00
					6	11	245	84	59.50	12.60	21.40
					7	10	255	73	62.40	12.30	23.00
					8	1	256	63	196.80	12.30	24.80
					9	13	269	62	54.60	12.00	25.00
					10	2	271	49	139.00	11.90	28.10
					>10	47	318	47	29.00	11.00	29.00

(Continued)

Table A10 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams > Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams > Stated ESD
5-V-36	5560II	811237	164.0	2124	1	1916	1916	2124	3.80	3.80	3.60
					2	112	2028	208	15.50	3.60	11.30
					3	25	2053	96	32.80	3.60	16.70
					4	21	2074	71	39.70	3.60	19.50
					5	6	2080	50	67.00	3.60	23.20
					6	6	2086	44	67.00	3.60	24.80
					7	6	2092	38	67.00	3.60	26.60
					8	6	2098	32	67.00	3.60	29.00
					9	7	2105	26	62.00	3.60	32.20
					10	0	2105	19	>164.00	3.60	37.70
					>10	19	2124	19	37.70	3.60	37.70
5-V-37	5460I	116376	32.8	67	1	12	12	67	9.50	9.50	4.00
					2	23	35	55	6.80	5.60	4.40
					3	13	48	32	9.10	4.70	5.80
					4	1	49	19	32.80	4.70	7.50
					5	0	49	18	>32.80	4.70	7.70
					6	0	49	18	>32.80	4.70	7.70
					7	3	52	18	19.00	4.60	7.70
					8	1	53	15	32.80	4.50	8.00
					9	5	58	14	14.70	4.30	8.80
					10	5	63	9	14.70	4.10	10.90
					>10	4	67	4	16.40	4.00	16.40
5-V-38	5460I	132383	131.2	665	1	354	354	665	7.00	7.00	5.10
					2	237	591	311	8.50	5.40	7.40
					3	21	612	74	98.80	5.30	15.30
					4	37	649	53	21.60	5.20	18.00
					5	0	649	16	>131.20	5.20	32.80
					6	0	649	16	>131.20	5.20	32.80
					7	0	649	16	>131.20	5.20	32.80
					8	0	649	16	>131.20	5.20	32.80
					9	0	649	16	>131.20	5.20	32.80
					10	16	665	16	32.80	5.10	32.80
					>10	0	665	0	>131.20	5.10	>131.20
5-V-39	5560I	820254	49.2	22	1	0	0	22	>49.20	>49.20	10.50
					2	0	0	22	>49.20	>49.20	10.50
					3	0	0	22	>49.20	>49.20	10.50
					4	0	0	22	>49.20	>49.20	10.50
					5	0	0	22	>49.20	>49.20	10.50
					6	1	1	22	49.20	49.20	10.50
					7	3	4	21	28.40	29.60	10.70
					8	2	6	18	34.80	20.10	11.60
					9	1	7	16	49.20	18.60	12.30
					10	6	13	15	20.10	13.70	12.70
					>10	9	22	9	16.40	10.50	16.40
5-V-40	5560II	728160	65.6	39	1	16	16	39	16.40	16.40	10.50
					2	9	25	23	21.90	13.10	13.70
					3	6	31	14	26.80	11.80	17.50
					4	5	36	8	29.40	10.90	23.20
					5	0	36	3	>65.60	10.90	37.90
					6	0	36	3	>65.60	10.90	37.90
					7	1	37	3	65.60	10.80	37.90
					8	1	38	2	65.60	10.70	46.40
					9	0	38	1	>65.60	10.70	65.60
					10	1	39	1	65.60	10.50	65.60
					>10	0	39	0	>65.60	10.50	>65.60
5-V-41	5660III	874199	98.4	505	1	232	232	505	6.50	6.50	4.40
					2	188	420	273	7.20	4.80	5.90
					3	10	430	85	31.20	4.70	10.70
					4	52	482	75	13.60	4.50	11.40
					5	5	487	23	44.00	4.50	20.30
					6	2	489	18	69.50	4.50	23.20
					7	0	489	16	>98.40	4.50	24.60
					8	0	489	16	>98.40	4.50	24.60
					9	0	489	16	>98.40	4.50	24.60
					10	15	504	16	25.40	4.40	24.60
					>10	1	505	1	98.40	4.40	98.40
5-V-42	5660III	898208	78.8	518	1	371	371	[illegible]	4.10	4.10	3.50
					2	75	446	[illegible]	9.10	3.70	6.50
					3	24	470	[illegible]	16.10	3.60	9.30
					4	16	486	[illegible]	19.70	3.60	11.40
					5	2	488	32	55.60	3.60	13.90
					6	24	512	30	16.10	3.50	14.40
					7	3	515	6	45.50	3.50	32.20
					8	1	516	3	78.80	3.50	45.50
					9	0	516	2	>78.80	3.50	55.60
					10	1	517	2	78.80	3.50	55.60
					>10	1	518	1	78.80	3.50	78.80

(Continued)

Table A10 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (EMD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated EMD	Cumulative Stem Count for Diams > Stated EMD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated EMD	Stem Spacing, ft, for Diams > Stated EMD
5-V-43	5460I	215344	98.4	443	1	284	284	443	5.90	5.90	4.70
					2	96	380	159	10.00	5.00	7.80
					3	30	410	63	18.00	4.90	12.40
					4	8	418	33	34.80	4.80	17.10
					5	2	420	25	69.50	4.80	19.70
					6	9	429	23	32.80	4.70	20.50
					7	3	432	14	56.90	4.70	26.20
					8	11	443	11	28.60	4.70	28.60
					9	0	443	0	>98.40	4.70	>98.40
					10	0	443	0	>98.40	4.70	>98.40
					>10	0	443	0	>98.40	4.70	>98.40
5-V-44	5460I	163392	78.8	109	1	16	16	109	19.70	19.70	7.60
					2	31	47	93	14.20	11.50	8.20
					3	34	81	62	13.50	8.80	10.00
					4	20	101	28	17.70	7.80	14.90
					5	2	103	8	55.60	7.80	27.80
					6	2	105	6	55.60	7.70	32.20
					7	2	107	4	55.60	7.60	39.40
					8	0	107	2	>78.80	7.60	55.60
					9	0	107	2	>78.80	7.60	55.60
					10	1	108	2	78.80	7.60	55.60
					>10	1	109	1	78.80	7.60	78.80
5-V-45	5660III	926225	49.2	102	1	53	53	102	6.80	6.80	4.90
					2	22	75	49	10.50	5.70	7.00
					3	5	80	27	22.00	5.50	9.50
					4	8	88	22	17.40	5.30	10.50
					5	4	92	14	24.60	5.10	13.20
					6	8	100	10	17.40	4.90	15.60
					7	0	100	49	>17.40	4.90	15.60
					8	2	102	2	34.80	4.90	34.80
					9	0	102	49	>34.80	4.90	49.20
					10	0	102	49	>34.80	4.90	49.20
					>10	0	102	49	>34.80	4.90	49.20
5-V-46	5660III	905203	39.4	86	1	59	59	86	5.10	5.10	4.30
					2	21	80	27	8.60	4.40	7.60
					3	4	84	6	19.70	4.30	19.70
					4	1	85	2	39.40	4.30	27.80
					5	0	85	1	>39.40	4.30	39.40
					6	1	86	1	39.40	4.30	39.40
					7	0	86	0	>39.40	4.30	>39.40
					8	0	86	0	>39.40	4.30	>39.40
					9	0	86	0	>39.40	4.30	>39.40
					10	0	86	0	>39.40	4.30	>39.40
					>10	0	86	0	>39.40	4.30	>39.40
5-V-47	5660III	932094	98.4	340	1	159	159	340	7.80	7.80	5.30
					2	119	278	181	9.00	5.90	7.30
					3	22	300	62	21.00	5.70	12.50
					4	13	313	40	27.30	5.60	15.60
					5	11	324	27	29.60	5.50	18.90
					6	6	330	16	40.10	5.40	24.60
					7	2	332	10	69.50	5.40	31.00
					8	2	334	8	69.50	5.40	34.80
					9	3	337	6	56.80	5.40	40.10
					10	1	338	3	98.40	5.30	56.80
					>10	2	340	2	69.50	5.30	69.50
5-V-48	5660III	945088	32.8	47	1	11	11	47	9.90	9.90	4.80
					2	21	32	36	7.20	5.80	5.50
					3	8	40	15	11.60	5.20	8.50
					4	6	46	7	13.40	4.80	12.40
					5	0	46	1	>32.80	4.80	32.80
					6	1	47	1	32.80	4.80	32.80
					7	0	47	0	>32.80	4.80	>32.80
					8	0	47	0	>32.80	4.80	>32.80
					9	0	47	0	>32.80	4.80	>32.80
					10	0	47	0	>32.80	4.80	>32.80
					>10	0	47	0	>32.80	4.80	>32.80
5-V-49	5560II	635202	49.2	90	1	66	66	90	6.00	6.00	5.20
					2	22	88	24	10.50	5.30	10.00
					3	2	90	2	34.80	5.20	34.80
					4	0	90	0	>49.20	5.20	>49.20
					5	0	90	0	>49.20	5.20	>49.20
					6	0	90	0	>49.20	5.20	>49.20
					7	0	90	0	>49.20	5.20	>49.20
					8	0	90	0	>49.20	5.20	>49.20
					9	0	90	0	>49.20	5.20	>49.20
					10	0	90	0	>49.20	5.20	>49.20
					>10	0	90	0	>49.20	5.20	>49.20

(Continued)

Table A10 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (EMD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated EMD	Cumulative Stem Count for Diams > Stated EMD	Stem Spacing ft	Stem Spacing, ft for Diams ≤ Stated EMD	Stem Spacing, ft, for Diams > Stated EMD
5-V-50	5560II	614200	49.2	115	1	57	57	115	6.50	6.50	4.60
					2	45	102	58	7.30	4.90	6.50
					3	6	108	13	20.00	4.80	13.70
					4	3	111	7	28.40	4.70	18.60
					5	1	112	4	49.20	4.70	24.60
					6	1	113	3	49.20	4.60	28.40
					7	0	113	3	>49.20	4.60	34.80
					8	1	114	2	49.20	4.60	34.80
					9	1	115	1	49.20	4.60	49.20
					10	0	115	1	>49.20	4.60	49.20
					>10	0	115	1	>49.20	4.60	49.20
5-V-51	5560III	386207	39.4	79	1	30	30	79	7.20	7.20	4.40
					2	32	62	49	7.00	5.00	5.60
					3	6	68	17	16.10	4.80	9.60
					4	9	77	11	13.10	4.50	11.20
					5	1	78	2	39.40	4.50	27.80
					6	0	78	1	>39.40	4.50	39.40
					7	1	79	1	39.40	4.40	39.40
					8	0	79	0	>39.40	4.40	>39.40
					9	0	79	0	>39.40	4.40	>39.40
					10	0	79	0	>39.40	4.40	>39.40
					>10	0	79	0	>39.40	4.40	>39.40
5-V-52	5560III	387134	65.6	238	1	81	81	238	7.30	7.30	4.30
					2	50	131	157	9.30	5.70	5.20
					3	18	149	102	15.40	5.40	6.40
					4	16	165	82	16.40	5.10	7.00
					5	19	184	66	15.10	4.90	7.70
					6	27	211	47	12.60	4.50	9.00
					7	3	214	20	38.00	4.50	12.60
					8	14	228	17	17.50	4.40	13.40
					9	7	235	10	24.80	4.30	20.80
					10	0	235	3	>69.60	4.30	38.00
					>10	3	238	3	38.00	4.30	38.00
5-V-53	5560III	388132	98.4	101	1	50	50	101	13.90	13.90	9.80
					2	1	51	51	98.40	13.80	13.80
					3	4	55	50	49.70	13.30	13.90
					4	19	74	46	22.50	11.40	14.50
					5	6	80	27	40.00	11.00	19.00
					6	8	88	21	34.40	10.50	21.40
					7	9	97	13	32.80	10.00	27.20
					8	1	98	4	98.40	10.00	49.20
					9	1	99	3	98.40	9.90	56.80
					10	1	100	2	98.40	9.80	69.50
					>10	1	101	1	98.40	9.80	98.40
5-V-54	5560III	358078	49.2	46	1	3	3	46	28.40	28.40	7.30
					2	10	13	43	15.60	13.70	7.50
					3	11	24	33	14.90	10.00	8.60
					4	6	30	22	21.00	9.00	10.50
					5	10	40	16	15.60	7.80	12.30
					6	4	44	6	24.60	7.40	20.60
					7	0	44	2	>49.20	7.40	34.80
					8	0	44	2	>49.20	7.40	34.80
					9	0	44	2	>49.20	7.40	34.80
					10	0	44	2	>49.20	7.40	34.80
					>10	2	46	2	34.80	7.30	34.80
5-V-55	5560III	420218	78.8	102	1	9	9	102	26.30	26.30	7.80
					2	29	38	93	14.80	12.90	8.20
					3	12	50	64	22.80	11.10	9.80
					4	13	63	52	21.80	10.00	11.80
					5	8	71	39	27.90	9.40	12.60
					6	26	97	31	15.90	8.00	14.10
					7	0	97	5	>78.80	8.00	35.20
					8	1	98	5	78.80	8.00	35.20
					9	1	99	4	78.80	7.90	39.40
					10	2	101	3	55.60	7.90	45.50
					>10	1	102	1	78.80	7.80	78.80
5-V-56	5460II	267237	49.2	88	1	40	40	88	7.80	7.80	5.30
					2	34	74	48	8.50	5.70	7.10
					3	4	78	14	24.60	5.60	13.20
					4	7	85	10	18.70	5.30	15.60
					5	1	86	3	49.20	5.30	28.40
					6	1	87	2	49.20	5.30	34.80
					7	0	87	1	>49.20	5.30	49.20
					8	0	87	1	>49.20	5.30	49.20
					9	0	87	1	>49.20	5.30	49.20
					10	1	88	1	49.20	5.30	49.20
					>10	0	88	0	49.20	5.30	49.20

(Continued)

Table A10 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams > Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams > Stated ESD
5-V-57	5560III	568137	26.2	65	1	30	30	65	4.80	4.80	3.20
					2	27	57	35	5.10	3.50	4.40
					3	7	64	8	9.90	3.30	9.30
					4	1	65	1	26.20	3.20	26.20
					5	0	65	0	>26.20	3.20	>26.20
					6	0	65	0	>26.20	3.20	>26.20
					7	0	65	0	>26.20	3.20	>26.20
					8	0	65	0	>26.20	3.20	>26.20
					9	0	65	0	>26.20	3.20	>26.20
					10	0	65	0	>26.20	3.20	>26.20
					>10	0	65	0	>26.20	3.20	>26.20
5-V-58	5460II	230232	26.2	66	1	32	32	66	4.60	4.60	3.20
					2	26	58	34	5.10	3.40	4.50
					3	7	65	8	9.90	3.30	9.30
					4	0	65	1	>26.20	3.30	26.20
					5	0	65	1	>26.20	3.30	26.20
					6	1	66	1	26.20	3.20	26.20
					7	0	66	0	>26.20	3.20	>26.20
					8	0	66	0	>26.20	3.20	>26.20
					9	0	66	0	>26.20	3.20	>26.20
					10	0	66	0	>26.20	3.20	>26.20
					>10	0	66	0	>26.20	3.20	>26.20
5-V-59	5460II	210243	32.8	32	1	5	5	32	14.70	14.70	5.80
					2	18	23	27	7.70	6.90	6.30
					3	3	26	9	19.00	6.40	10.90
					4	4	30	6	16.40	6.00	13.40
					5	0	30	2	>32.80	6.00	23.20
					6	1	31	2	32.80	5.90	23.20
					7	0	31	1	>32.80	5.90	32.80
					8	0	31	1	>32.80	5.90	32.80
					9	0	31	1	>32.80	5.90	32.80
					10	0	31	1	>32.80	5.90	32.80
					>10	1	32	1	32.80	5.80	32.80
5-V-60	5460II	181245	32.8	68	1	34	34	68	5.60	5.60	4.00
					2	24	58	34	6.70	4.30	5.60
					3	3	61	10	19.00	4.20	10.40
					4	2	63	7	23.20	4.10	12.40
					5	0	63	5	>32.80	4.10	14.70
					6	0	63	5	>32.80	4.10	14.70
					7	0	63	5	>32.80	4.10	14.70
					8	0	63	5	>32.80	4.10	14.70
					9	2	65	5	23.20	4.10	14.70
					10	1	66	3	32.80	4.00	19.00
					>10	2	68	2	23.20	4.00	23.20
5-V-61	5460II	188217	32.8	31	1	4	4	31	16.40	16.40	5.90
					2	15	19	27	9.50	7.50	6.30
					3	6	25	12	13.40	6.60	9.50
					4	2	27	6	23.20	6.30	13.40
					5	0	27	4	>32.80	6.30	16.40
					6	1	28	4	32.80	6.20	16.40
					7	1	29	3	32.80	6.10	19.00
					8	1	30	2	32.80	6.00	23.20
					9	0	30	1	>32.80	6.00	32.80
					10	0	30	1	>32.80	6.00	32.80
					>10	1	31	1	32.80	5.90	32.80
5-V-62	5460II	170247	49.2	80	1	35	35	80	8.30	8.30	5.50
					2	12	47	45	14.20	7.20	7.30
					3	11	58	33	14.80	6.50	8.60
					4	16	74	22	12.30	5.70	10.50
					5	3	77	6	28.40	5.60	20.00
					6	2	79	3	34.80	5.50	28.40
					7	0	79	1	>49.20	5.50	49.20
					8	0	79	1	>49.20	5.50	49.20
					9	0	79	1	>49.20	5.50	49.20
					10	1	80	1	49.20	5.50	49.20
					>10	0	80	0	>49.20	5.50	>49.20
5-V-63	5460II	276156	26.2	33	1	4	4	33	13.10	13.10	4.60
					2	20	24	29	5.90	5.40	4.90
					3	5	29	9	11.70	4.90	8.70
					4	2	31	4	18.50	4.80	13.10
					5	2	33	2	18.50	4.60	18.50
					6	0	33	0	>26.20	4.60	>26.20
					7	0	33	0	>26.20	4.60	>26.20
					8	0	33	0	>26.20	4.60	>26.20
					9	0	33	0	>26.20	4.60	>26.20
					10	0	33	0	>26.20	4.60	>26.20
					>10	0	33	0	>26.20	4.60	>26.20

(Continued)

Table A10 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams > Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams > Stated ESD
5-V-64	5460I	279344	131.2	48	1	0	0	48	>131.20	>131.20	19.00
					2	0	0	48	>131.20	>131.20	19.00
					3	1	1	48	131.20	131.20	19.00
					4	4	5	47	65.60	58.90	19.20
					5	5	10	43	58.90	41.60	20.00
					6	10	20	38	41.60	29.40	21.30
					7	2	22	28	92.90	28.00	24.90
					8	6	28	26	53.60	24.80	25.80
					9	8	36	20	46.50	21.90	29.40
					10	0	36	12	>131.20	19.00	38.00
					>10	12	48	12	38.00	19.00	38.00
5-V-65	5660III	871170	49.2	116	1	40	40	116	7.80	7.80	4.60
					2	47	87	76	7.30	5.30	5.60
					3	7	94	29	18.60	5.10	9.20
					4	18	112	22	11.60	4.70	10.50
					5	3	115	4	28.40	4.60	24.60
					6	0	115	1	>49.20	4.60	49.20
					7	0	115	1	>49.20	4.60	49.20
					8	0	115	1	>49.20	4.60	49.20
					9	0	115	1	>49.20	4.60	49.20
					10	0	115	1	>49.20	4.60	49.20
					>10	1	116	1	49.20	4.60	49.20
5-V-66	5560II	796169	98.4	3,223	1	3195	3195	3223	1.70	1.70	1.70
					2	0	3195	28	>98.40	1.70	18.60
					3	3	3198	28	56.90	1.70	18.60
					4	2	3200	25	69.50	1.70	19.70
					5	3	3203	23	56.90	1.70	20.20
					6	12	3215	20	28.40	1.70	22.00
					7	1	3216	8	98.40	1.70	34.80
					8	4	3220	7	49.20	1.70	37.20
					9	0	3220	3	>98.40	1.70	56.90
					10	0	3220	3	>98.40	1.70	56.90
					>10	3	3223	3	56.90	1.70	56.90
5-V-67	5461II	164456	131.2	588	1	291	291	588	7.70	7.70	5.40
					2	181	472	297	9.80	6.10	7.60
					3	8	480	116	46.50	6.00	12.20
					4	23	503	108	27.40	5.90	12.60
					5	45	548	85	19.60	5.60	14.30
					6	8	556	40	46.50	5.60	20.80
					7	6	562	32	53.60	5.50	23.20
					8	4	566	26	65.60	5.50	25.80
					9	10	576	22	41.60	5.50	28.00
					10	1	577	12	131.20	5.50	38.00
					>10	11	588	11	39.60	5.40	39.60
5-V-68	5560IV	517309	49.2	93	1	58	58	93	6.50	6.50	5.10
					2	25	83	35	9.80	5.40	8.30
					3	4	87	10	24.60	5.30	15.60
					4	3	90	6	28.40	5.20	20.10
					5	0	90	3	>49.20	5.20	28.40
					6	0	90	3	>49.20	5.20	28.40
					7	1	91	3	49.20	5.20	28.40
					8	0	91	2	>49.20	5.20	34.80
					9	0	91	2	>49.20	5.20	34.80
					10	1	92	2	49.20	5.10	34.80
					>10	1	93	1	49.20	5.10	49.20
5-V-69	5560IV	495323	164.0	377	1	250	250	377	10.30	10.30	8.40
					2	50	300	127	23.20	9.50	14.60
					3	0	300	77	>164.00	9.50	18.70
					4	0	300	77	>164.00	9.50	18.70
					5	25	325	77	32.80	9.10	18.70
					6	0	325	52	>164.00	9.10	22.80
					7	2	327	52	115.80	9.10	22.80
					8	3	330	50	94.80	9.00	23.20
					9	10	340	47	52.00	8.90	24.00
					10	4	344	37	82.00	8.80	27.00
					>10	33	377	33	28.60	8.40	28.60
5-V-70	5560IV	492256	49.2	208	1	147	147	208	4.10	4.10	3.40
					2	43	190	61	7.50	3.60	6.30
					3	9	199	18	16.40	3.50	11.60
					4	4	203	9	24.60	3.50	16.40
					5	1	204	5	49.20	3.50	22.00
					6	2	206	4	34.80	3.40	24.60
					7	0	206	2	>49.20	3.40	34.80
					8	1	207	2	49.20	3.40	34.80
					9	0	207	1	>49.20	3.40	49.20
					10	1	208	1	49.20	3.40	49.20
					>10	0	208	0	>49.20	3.40	>49.20

(Continued)

Table A10 (Concluded)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems >1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams > Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams > Stated ESD
5-V-71	5560IV	473271	39.4	87	1	57	57	87	5.20	5.20	4.20
					2	23	80	30	8.40	4.40	7.20
					3	3	83	7	22.80	4.30	14.90
					4	3	86	4	22.80	4.20	19.70
					5	0	86	1	>39.40	4.20	39.40
					6	0	86	1	>39.40	4.20	39.40
					7	0	86	1	>39.40	4.20	39.40
					8	0	86	1	>39.40	4.20	39.40
					9	0	86	1	>39.40	4.20	39.40
					10	1	87	1	39.40	4.20	39.40
					>10	0	87	0	>39.40	4.20	>39.40
5-V-72	5660IV	899313	98.4	185	1	90	90	185	10.40	10.40	7.20
					2	13	103	95	27.20	9.70	10.10
					3	17	120	82	23.80	9.00	10.80
					4	22	142	65	21.00	8.20	12.20
					5	6	148	43	40.10	8.10	15.00
					6	3	151	37	56.90	8.00	16.20
					7	11	162	34	29.60	7.70	16.90
					8	5	167	23	44.00	7.60	20.20
					9	7	174	18	37.20	7.50	23.20
					10	3	177	11	56.90	7.40	29.60
					>10	8	185	8	34.80	7.20	34.80
5-V-73	5660IV	937301	98.4	899	1	306	306	899	5.60	5.60	3.30
					2	463	769	593	4.60	3.50	4.40
					3	89	858	130	10.40	3.40	8.60
					4	15	873	41	25.40	3.30	15.40
					5	2	875	26	69.50	3.30	19.30
					6	1	876	24	98.40	3.30	20.10
					7	6	882	23	40.10	3.30	20.50
					8	1	883	17	98.40	3.30	23.80
					9	8	891	16	34.80	3.30	24.60
					10	2	893	8	69.50	3.30	34.80
					>10	6	899	6	40.10	3.30	40.10
5-V-74	5560I	856297	196.8	20	1	0	0	20	>196.80	>196.80	44.00
					2	0	0	20	>196.80	>196.80	44.00
					3	0	0	20	>196.80	>196.80	44.00
					4	0	0	20	>196.80	>196.80	44.00
					5	0	0	20	>196.80	>196.80	44.00
					6	0	0	20	>196.80	>196.80	44.00
					7	0	0	20	>196.80	>196.80	44.00
					8	0	0	20	>196.80	>196.80	44.00
					9	0	0	20	>196.80	>196.80	44.00
					10	0	0	20	>196.80	>196.80	44.00
					>10	20	20	20	44.00	44.00	44.00
5-V-75	5560III	359239	3.3	24	1	24	24	24	0.67	0.67	0.67
					2	0	24	0	>3.30	0.67	>3.30
					3	0	24	0	>3.30	0.67	>3.30
					4	0	24	0	>3.30	0.67	>3.30
					5	0	24	0	>3.30	0.67	>3.30
					6	0	24	0	>3.30	0.67	>3.30
					7	0	24	0	>3.30	0.67	>3.30
					8	0	24	0	>3.30	0.67	>3.30
					9	0	24	0	>3.30	0.67	>3.30
					10	0	24	0	>3.30	0.67	>3.30
					>10	0	24	0	>3.30	0.67	>3.30

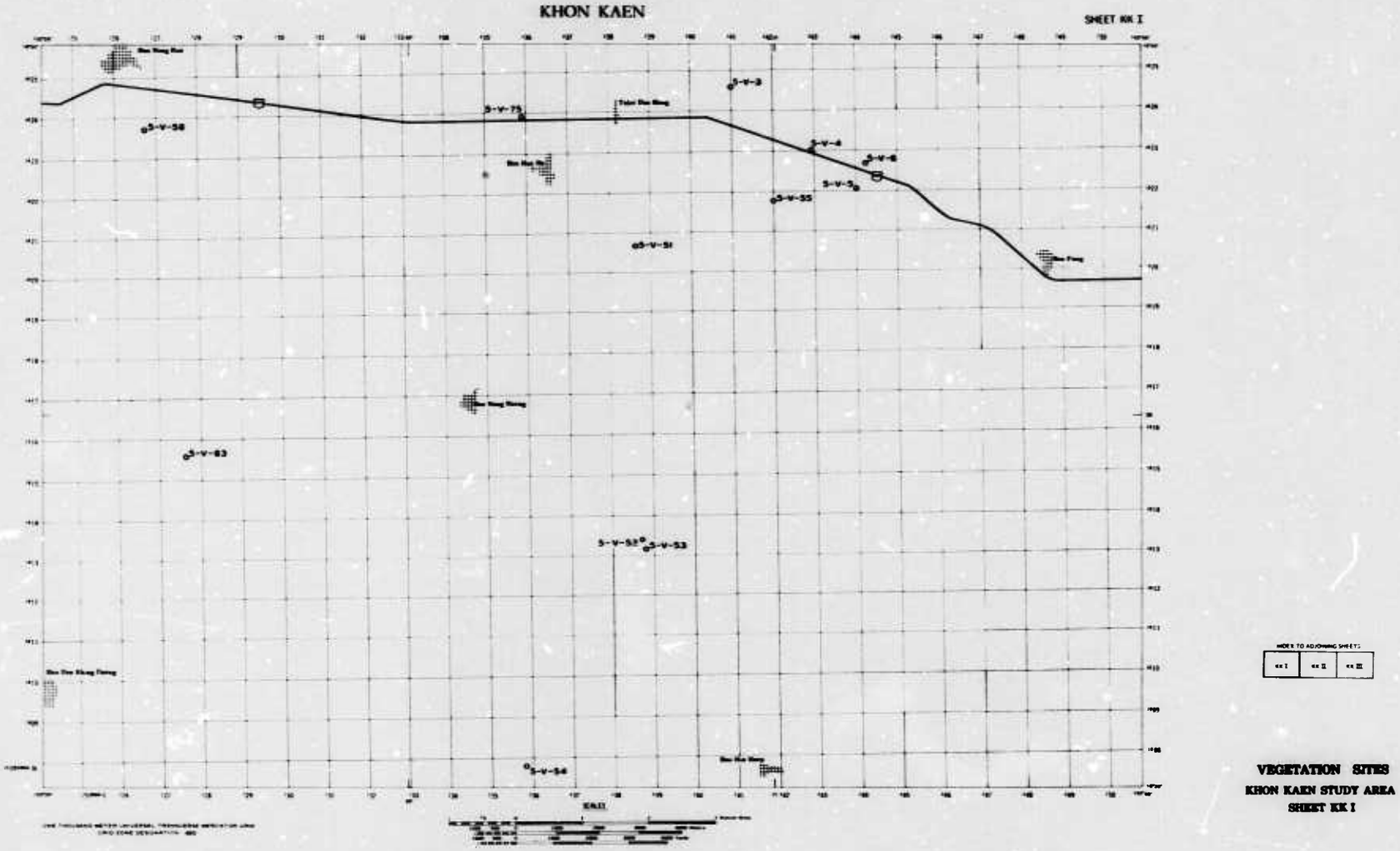
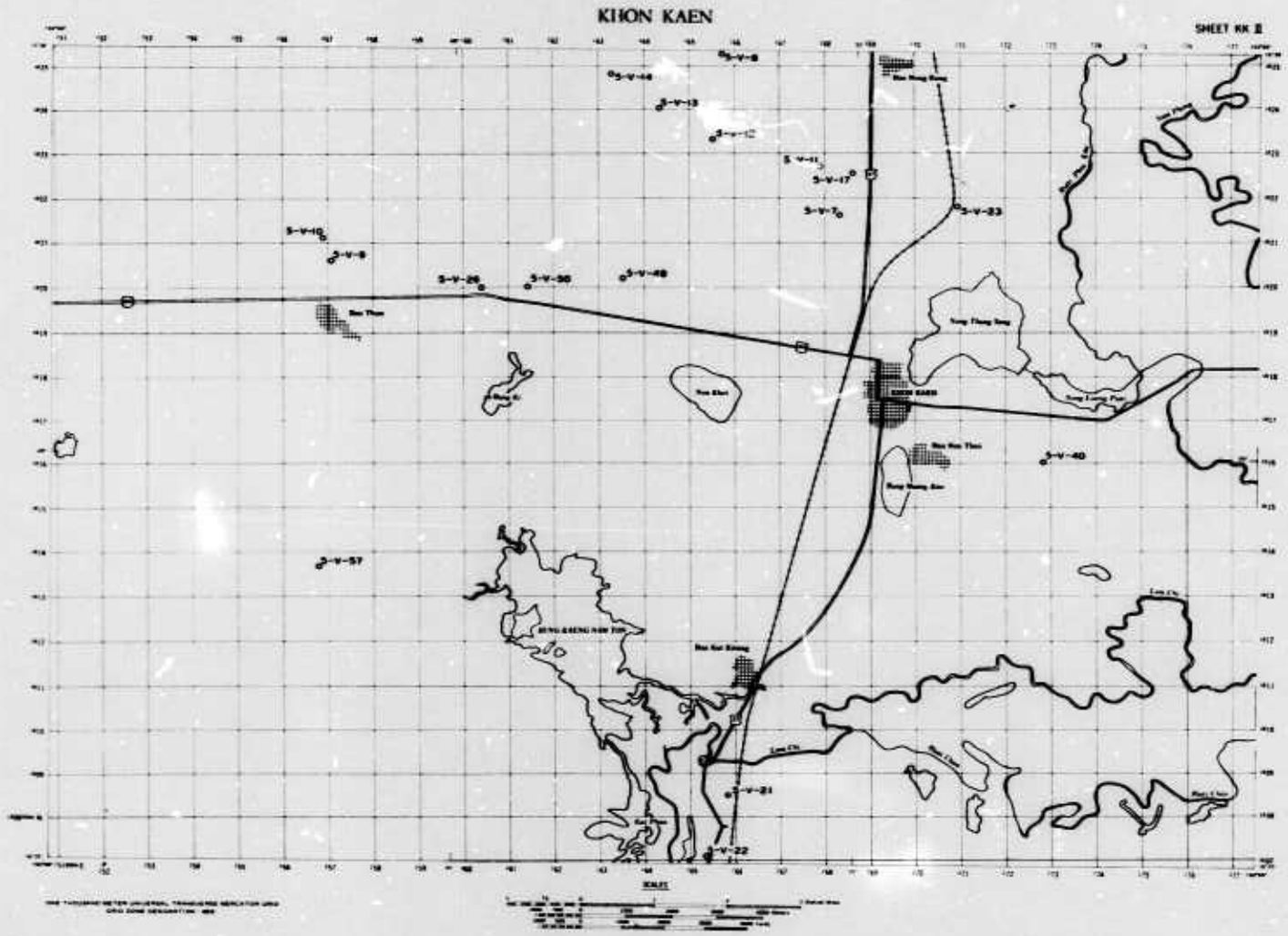
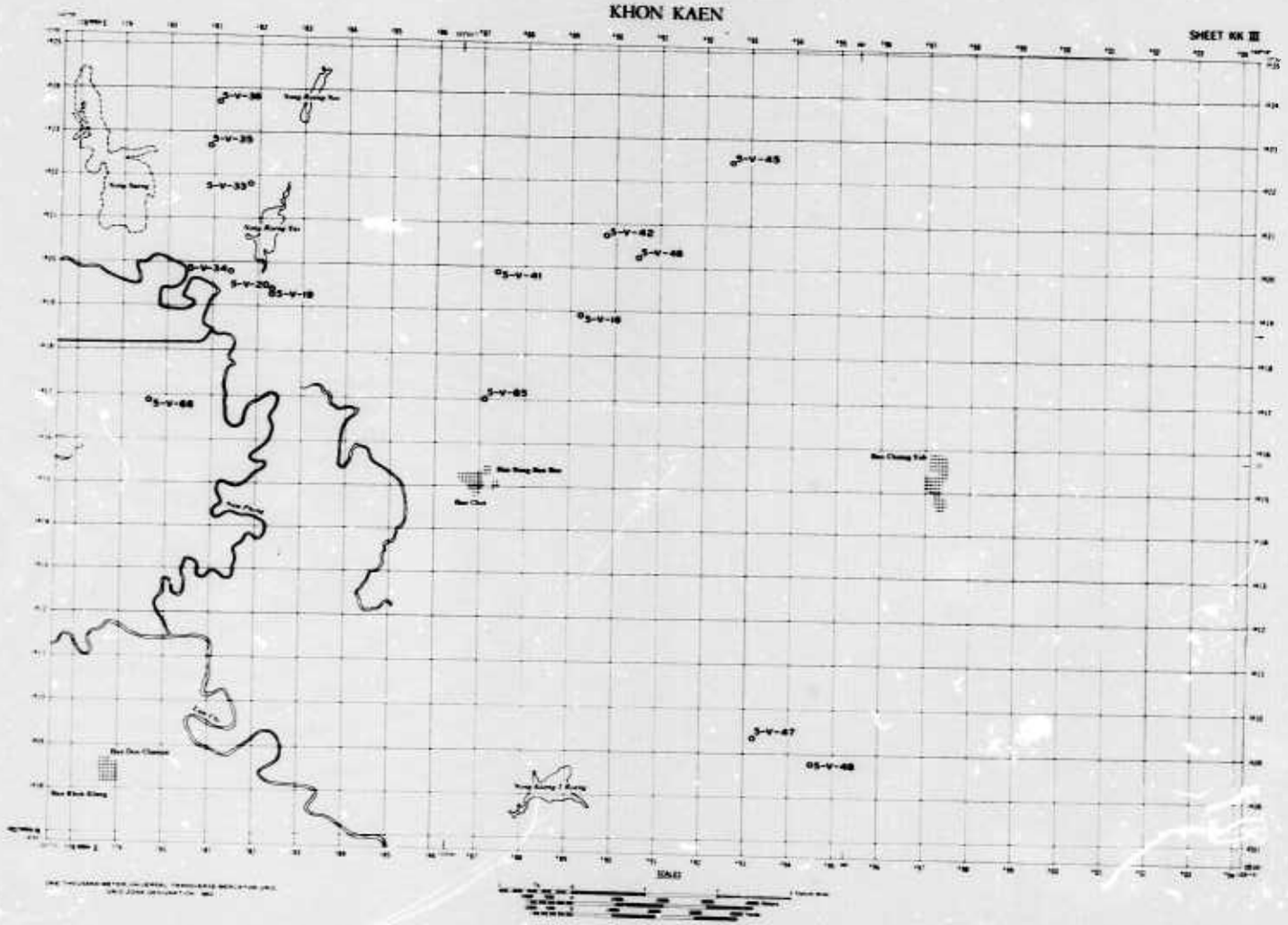

KHON KAEN
SHEET KK I
5-V-58
5-V-75
5-V-3
5-V-4
5-V-6
5-V-5
5-V-55
5-V-51
5-V-63
5-V-52
5-V-53
5-V-54
EAST
INDEX TO ADJOINING SHEETS
KK I
KK II
KK III
VEGETATION SITES
KHON KAEN STUDY AREA
SHEET KK I

FIG. A19

FIG. A20



VEGETATION SITES
KHON KAEN STUDY AREA
SHEET KK II



VEGETATION SITES
KHON KAEN STUDY AREA
SHEET KK III

FIG. A21

CHANTHABURI STUDY AREA

Table A11

Vegetation Site Summation

Chanthaburi

Site No.	Location: Map Sheet*	Location: Grid Coordinates	Location: Fig. No.	Date Sampled
6-V-3	5349II	151069	A22	24 Feb 1965
6-V-4	5349II	143047	A22	24 Feb 1965
6-V-6	5348I	153974	A23	21 Feb 1965
6-V-7	5348I	152979	A23	22 Feb 1965
6-V-8	5348I	134955	A23	22 Feb 1965
6-V-9	5348I	142962	A23	22 Feb 1965
6-V-10	5348I	129948	A23	21 Feb 1965
6-V-11	5448IV	918918	A24	16 Feb 1965
6-V-12	5448IV	913894	A24	16 Feb 1965
6-V-13	5448IV	913872	A24	16 Feb 1965
6-V-14	5349II	041058	A22†	13 Mar 1965
6-V-15	5448IV	937845	A24	17 Feb 1965
6-V-16	5448IV	801877	A24	20 Feb 1965
6-V-18	5448II	819899	A24	8 Mar 1965
6-V-19	5448IV	818895	A24	8 Mar 1965
6-V-22	5448IV	831930	A24	8 Mar 1965
6-V-23	5448IV	857956	A24	19 Feb 1965
6-V-24	5448IV	847963	A24	14 Mar 1965
6-V-25	5448IV	809969	A24	19 Feb 1965
6-V-26	5448IV	782975	A24	17 Feb 1965
6-V-26A	5448IV	788967	A24	19 Feb 1965
6-V-27	5448IV	789014	A24	18 Feb 1965
6-V-28	5448IV	821012	A24	18 Feb 1965
6-V-29	5448III	979766	A25	5 Mar 1965
6-V-30	5448III	890793	A25	5 Mar 1965
6-V-32	5349II	203041	A22	6 Mar 1965
6-V-33	5349II	204029	A22	6 Mar 1965
6-V-34	5348I	150019	A23	12 Mar 1965
6-V-35	5349II	154046	A22	7 Mar 1965
6-V-36	5349II	153032	A22	12 Mar 1965
6-V-37	5349II	123025	A22	7 Mar 1965
6-V-38	5449III	850024	**	9 Mar 1965
6-V-39	5449III	839059	**	10 Mar 1965
6-V-40	5449III	833102	**	9 Mar 1965
6-V-41	5449III	837089	**	10 Mar 1965
6-V-42	5449III	815055	**	11 Mar 1965
6-V-43	5449III	841040	**	14 Mar 1965
6-V-44	5449III	806021	**	10 Mar 1965
6-V-45	5448IV	956972	A24	11 Mar 1965
6-V-46	5448IV	938958	A24	11 Mar 1965
6-V-47	5349II	065083	A22	13 Mar 1965
6-V-48	5349II	065040	A22	13 Mar 1965

Note: Missing site numbers are the result of sites having been preselected and numbered but not sampled. Grid coordinates are set up according to Military Grid System. The first three numbers represent longitude, and the second three numbers represent latitude.

* AMS, L708, 1:50,000.

** Site outside figure limits.

† All stems <1 in.

Table A12

Summary of Vegetation Field Data

Chanthaburi

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter* (ESD) in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
6-V-3	5349II	151069	32.80	3	1	7	7	33	12.40	12.40	5.70
					2	13	20	26	9.10	7.30	6.40
					3	9	29	13	10.90	6.10	9.10
					4	4	33	4	16.40	5.70	16.40
					5	0	33	0	>32.80	5.70	>32.80
					6	0	33	0	>32.80	5.70	>32.80
					7	0	33	0	>32.80	5.70	>32.80
					8	0	33	0	>32.80	5.70	>32.80
					9	0	33	0	>32.80	5.70	>32.80
					10	0	33	0	>32.80	5.70	>32.80
					>10	0	33	0	>32.80	5.70	>32.80
6-V-4	5349II	143047	26.20	44	1	15	15	44	6.80	6.80	4.00
					2	22	37	29	5.60	4.30	4.90
					3	5	32	7	11.70	4.00	9.90
					4	2	34	2	18.50	4.00	18.50
					5	0	34	0	>26.20	4.00	>26.20
					6	0	34	0	>26.20	4.00	>26.20
					7	0	34	0	>26.20	4.00	>26.20
					8	0	34	0	>26.20	4.00	>26.20
					9	0	34	0	>26.20	4.00	>26.20
					10	0	34	0	>26.20	4.00	>26.20
					>10	0	34	0	>26.20	4.00	>26.20
6-V-6	5348I	153974	39.40	84	1	10	10	84	12.50	12.50	4.30
					2	24	34	74	8.00	6.80	4.60
					3	29	63	50	7.30	5.00	5.60
					4	14	77	21	10.50	4.50	8.60
					5	3	80	7	22.80	4.40	14.90
					6	3	83	4	22.80	4.30	19.70
					7	1	84	1	39.40	4.30	39.40
					8	0	84	0	>39.40	4.30	>39.40
					9	0	84	0	>39.40	4.30	>39.40
					10	0	84	0	>39.40	4.30	>39.40
					>10	0	84	0	>39.40	4.30	>39.40
6-V-7	5348I	152979	13.12	5	1	5	5	5	5.90	5.90	5.90
					2	0	5	0	>13.12		
					3	0	5	0	>13.12		
					4	0	5	0	>13.12		
					5	0	5	0	>13.12		
					6	0	5	0	>13.12		
					7	0	5	0			
					8	0	5	0			
					9	0	5	0			
					10	0	5	0			
					>10	0	5	0			
6-V-8	5348I	134955	98.40	187	1	31	31	187	17.70	17.70	7.20
					2	96	127	156	10.10	8.70	7.90
					3	26	153	60	19.30	8.00	12.80
					4	16	169	34	24.60	7.60	16.90
					5	5	174	18	44.00	7.50	23.30
					6	5	179	13	44.00	7.40	27.40
					7	3	182	8	56.90	7.30	34.70
					8	2	184	5	69.50	7.20	44.00
					9	1	185	3	98.40	7.20	56.90
					10	2	187	2	69.50	7.20	69.50
					>10	0	187	0	>98.40	7.20	>98.40
6-V-9	5348I	142962	13.12	20	1	14	14	20	3.50	3.50	2.90
					2	4	18	6	6.60	3.10	5.40
					3	2	20	2	9.30	2.90	9.30
					4	0	20	0	>13.12	2.90	>13.12
					5	0	20	0	>13.12	2.90	>13.12
					6	0	20	0	>13.12	2.90	>13.12
					7	0	20	0	>13.12	2.90	>13.12
					8	0	20	0	>13.12	2.90	>13.12
					9	0	20	0	>13.12	2.90	>13.12
					10	0	20	0	>13.12	2.90	>13.12
					>10	0	20	0	>13.12	2.90	>13.12
6-V-10	5348I	129948	98.40	19	1	0	0	19	>98.40	>98.40	22.50
					2	0	0	19	>98.40	>98.40	22.50
					3	0	0	19	>98.40	>98.40	22.50
					4	0	0	19	>98.40	>98.40	22.50
					5	0	0	19	>98.40	>98.40	22.50
					6	0	0	19	>98.40	>98.40	22.50
					7	0	0	19	>98.40	>98.40	22.50
					8	0	0	19	>98.40	>98.40	22.50
					9	0	0	19	>98.40	>98.40	22.50
					10	1	1	19	98.40	98.40	22.50
					>10	18	19	1	23.20	22.50	23.20

(Continued)

* Effective diameter includes clumps of stems that have been converted to a single diameter stem.

Table A12 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems ≥1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
6-V-11	5448IV	918918	98.40	30	1	0	0	30	>98.40	>98.40	18.00
					2	5	5	30	44.00	44.00	18.00
					3	5	10	25	44.00	31.00	19.70
					4	19	29	20	22.50	18.20	22.00
					5	1	30	1	98.40	18.00	98.40
					6	0	30	0	>98.40	18.00	>98.40
					7	0	30	0	>98.40	18.00	>98.40
					8	0	30	0	>98.40	18.00	>98.40
					9	0	30	0	>98.40	18.00	>98.40
					10	0	30	0	>98.40	18.00	>98.40
					>10	0	30	0	>98.40	18.00	>98.40
6-V-12	5448IV	913894	98.40	26	1	0	0	26	>98.40	>98.40	19.30
					2	0	0	26	>98.40	>98.40	19.30
					3	0	0	26	>98.40	>98.40	19.30
					4	0	0	26	>98.40	>98.40	19.30
					5	0	0	26	>98.40	>98.40	19.30
					6	0	0	26	>98.40	>98.40	19.30
					7	2	2	26	69.50	69.50	19.30
					8	5	7	24	44.00	37.10	20.00
					9	9	16	19	32.80	24.60	22.40
					10	4	20	10	49.10	32.00	31.20
					>10	6	26	6	40.00	19.30	40.00
6-V-13	5448IV	913872	32.80	28	1	21	21	28	7.20	7.20	6.20
					2	5	26	7	14.70	6.50	12.40
					3	2	28	2	23.20	6.20	23.20
					4	0	28	0	>32.80	6.20	>32.80
					5	0	28	0	>32.80	6.20	>32.80
					6	0	28	0	>32.80	6.20	>32.80
					7	0	28	0	>32.80	6.20	>32.80
					8	0	28	0	>32.80	6.20	>32.80
					9	0	28	0	>32.80	6.20	>32.80
					10	0	28	0	>32.80	6.20	>32.80
					>10	0	28	0	>32.80	6.20	>32.80
6-V-15	5448IV	937849	98.40	25	1	0	0	25	>98.40	>98.40	19.70
					2	0	0	25	>98.40	>98.40	19.70
					3	0	0	25	>98.40	>98.40	19.70
					4	0	0	25	>98.40	>98.40	19.70
					5	1	1	25	98.40	98.40	19.70
					6	0	0	24	>98.40	>98.40	20.10
					7	0	0	24	>98.40	>98.40	20.10
					8	1	2	24	98.40	69.50	20.10
					9	1	3	23	98.40	56.80	20.50
					10	2	5	22	69.50	44.00	21.00
					>10	20	25	20	22.00	19.70	22.00
6-V-16	5448IV	801877	78.80	843	1	804	804	843	2.80	2.80	2.70
					2	8	812	39	27.80	2.80	12.70
					3	6	818	31	32.20	2.80	14.10
					4	8	826	25	27.80	2.70	15.70
					5	4	830	17	39.40	2.70	19.10
					6	4	834	13	39.40	2.70	21.80
					7	1	835	9	78.80	2.70	26.30
					8	2	837	8	55.60	2.70	27.80
					9	2	839	6	55.60	2.70	32.20
					10	2	841	4	55.60	2.70	39.40
					>10	2	843	2	55.60	2.70	55.60
6-V-18	5448IV	816899	32.80	101	1	87	87	101	3.50	3.50	3.30
					2	14	101	14	8.80	3.30	8.80
					3	0	101	0	>32.80	3.30	>32.80
					4	0	101	0	>32.80	3.30	>32.80
					5	0	101	0	>32.80	3.30	>32.80
					6	0	101	0	>32.80	3.30	>32.80
					7	0	101	0	>32.80	3.30	>32.80
					8	0	101	0	>32.80	3.30	>32.80
					9	0	101	0	>32.80	3.30	>32.80
					10	0	101	0	>32.80	3.30	>32.80
					>10	0	101	0	>32.80	3.30	>32.80
6-V-19	5448IV	818899	98.40	16	1	0	0	16	>98.40	0	24.60
					2	0	0	16	>98.40	0	24.60
					3	3	3	16	56.80	56.80	24.60
					4	8	11	13	34.80	29.60	27.20
					5	2	13	5	69.60	27.20	29.60
					6	3	16	3	56.80	24.60	56.80
					7	0	16	0	>98.40	24.60	>98.40
					8	0	16	0	>98.40	24.60	>98.40
					9	0	16	0	>98.40	24.60	>98.40
					10	0	16	0	>98.40	24.60	>98.40
					>10	0	16	0	>98.40	24.60	>98.40

(Continued)

Table A12 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems >1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
6-V-22	5448IV	831930	19.70	37	1	3	3	37	11.40	11.40	3.20
					2	22	25	34	4.20	3.90	3.40
					3	6	31	12	8.00	3.50	5.70
					4	6	37	6	8.00	3.20	8.00
					5	0	37	0	>19.70	3.20	>19.70
					6	0	37	0	>19.70	3.20	>19.70
					7	0	37	0	>19.70	3.20	>19.70
					8	0	37	0	>19.70	3.20	>19.70
					9	0	37	0	>19.70	3.20	>19.70
					10	0	37	0	>19.70	3.20	>19.70
					>10	0	37	0	>19.70	3.20	>19.70
6-V-23	5448IV	857956	131.20	18,021	1	17,980	17,980	18,021	1.00	1.00	1.00
					2	0	17,980	41	>131.20	1.00	20.50
					3	0	17,980	41	>131.20	1.00	20.50
					4	0	17,980	41	>131.20	1.00	20.50
					5	1	17,981	41	131.20	1.00	20.50
					6	1	17,982	40	131.20	1.00	20.80
					7	6	17,988	39	53.60	1.00	21.00
					8	5	17,993	33	58.90	1.00	22.80
					9	2	17,995	28	93.00	1.00	24.80
					10	5	18,000	26	58.90	1.00	25.80
					>10	21	18,021	21	28.70	1.00	28.70
6-V-24	5448IV	847963	65.60	34	1	0	0	34	>65.60	>65.60	11.30
					2	1	1	34	65.60	65.60	11.30
					3	0	1	33	>65.60	65.60	11.40
					4	13	14	33	18.20	17.50	11.40
					5	11	25	20	19.80	13.10	14.70
					6	6	31	9	26.80	11.80	21.80
					7	2	33	3	46.40	11.40	38.00
					8	0	33	1	>65.60	11.40	65.60
					9	1	34	1	65.60	11.30	65.60
					10	0	34	1	>65.60	11.30	65.60
					>10	0	34	1	>65.60	11.30	65.60
6-V-25	5448IV	809969	65.60	61	1	17	17	61	15.90	15.90	8.40
					2	19	36	44	15.10	11.00	9.90
					3	7	43	25	24.80	10.00	13.10
					4	8	51	18	23.20	9.30	15.60
					5	1	52	10	65.60	9.20	20.80
					6	1	53	9	65.60	9.00	21.90
					7	2	55	8	46.50	8.90	22.50
					8	2	57	6	46.50	8.70	26.90
					9	2	59	4	46.50	8.60	32.80
					10	0	59	2	>65.60	8.60	46.50
					>10	2	61	2	46.50	8.40	46.50
6-V-26	5448IV	782975	98.40	19	1	0	0	19	>98.40	>98.40	22.60
					2	0	0	19	>98.40	>98.40	22.60
					3	5	5	19	44.00	44.00	22.60
					4	6	11	14	40.00	29.70	26.40
					5	4	15	8	49.20	25.40	34.70
					6	2	17	4	69.50	23.80	49.20
					7	0	17	2	>98.40	23.80	69.50
					8	0	17	2	>98.40	23.80	69.50
					9	0	17	2	>98.40	23.80	69.50
					10	1	18	2	98.40	23.20	69.50
					>10	1	19	1	98.40	22.60	98.40
6-V-26A	5448IV	788967	164.00	2,833	1	2,812	2,812	2,833	3.10	3.10	3.10
					2	20	2,832	21	36.60	3.10	35.80
					3	1	2,833	1	164.00	3.10	164.00
					4	0	2,833	0	>164.00	3.10	>164.00
					5	0	2,833	0	>164.00	3.10	>164.00
					6	0	2,833	0	>164.00	3.10	>164.00
					7	0	2,833	0	>164.00	3.10	>164.00
					8	0	2,833	0	>164.00	3.10	>164.00
					9	0	2,833	0	>164.00	3.10	>164.00
					10	0	2,833	0	>164.00	3.10	>164.00
					>10	0	2,833	0	>164.00	3.10	>164.00
6-V-27	5448IV	789014	39.40	85	1	38	38	85	6.40	6.40	4.30
					2	25	63	47	7.90	5.00	5.70
					3	7	70	22	14.90	4.70	8.50
					4	9	79	15	13.10	4.40	13.10
					5	3	82	6	22.80	4.40	16.10
					6	1	83	3	39.40	4.30	22.80
					7	2	85	2	27.80	4.30	27.80
					8	0	85	0	>39.40	4.30	>39.40
					9	0	85	0	>39.40	4.30	>39.40
					10	0	85	0	>39.40	4.30	>39.40
					>10	0	85	0	>39.40	4.30	>39.40

(Continued)

Table A12 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems >1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams > Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams > Stated ESD
6-V-28	5448IV	821012	65.60	28	1	11	11	28	19.80	19.80	12.40
					2	11	22	17	19.80	14.00	19.90
					3	6	28	6	26.80	12.40	26.80
					4	0	28	0	>65.60	12.40	>65.60
					5	0	28	0	>65.60	12.40	>65.60
					6	0	28	0	>65.60	12.40	>65.60
					7	0	28	0	>65.60	12.40	>65.60
					8	0	28	0	>65.60	12.40	>65.60
					9	0	28	0	>65.60	12.40	>65.60
					10	0	28	0	>65.60	12.40	>65.60
					>10	0	28	0	>65.60	12.40	>65.60
6-V-29	5448III	979766	65.60	145	1	75	75	145	7.60	7.60	5.40
					2	33	108	70	11.40	6.30	7.90
					3	18	126	37	13.90	5.80	10.80
					4	15	141	19	16.90	5.50	15.00
					5	2	143	4	46.40	5.50	32.80
					6	2	145	2	46.40	5.40	46.40
					7	0	145	0	>65.60	5.40	>65.60
					8	0	145	0	>65.60	5.40	>65.60
					9	0	145	0	>65.60	5.40	>65.60
					10	0	145	0	>65.60	5.40	>65.60
					>10	0	145	0	>65.60	5.40	>65.60
6-V-30	5448III	890793	19.60	27	1	0	0	27	>19.60	>19.60	3.80
					2	16	16	27	4.90	4.90	3.80
					3	3	19	11	11.30	4.50	5.90
					4	8	27	8	7.00	3.80	7.00
					5	0	27	0	>19.60	3.80	>19.60
					6	0	27	0	>19.60	3.80	>19.60
					7	0	27	0	>19.60	3.80	>19.60
					8	0	27	0	>19.60	3.80	>19.60
					9	0	27	0	>19.60	3.80	>19.60
					10	0	27	0	>19.60	3.80	>19.60
					>10	0	27	0	>19.60	3.80	>19.60
6-V-32	5349II	203041	39.40	77	1	14	14	77	10.50	10.50	4.50
					2	48	62	63	5.70	5.00	5.00
					3	10	72	15	12.50	4.70	10.80
					4	2	74	5	27.80	4.60	17.60
					5	1	75	3	39.40	4.50	22.80
					6	2	77	2	27.80	4.50	27.80
					7	0	77	0	>39.40	4.50	>39.40
					8	0	77	0	>39.40	4.50	>39.40
					9	0	77	0	>39.40	4.50	>39.40
					10	0	77	0	>39.40	4.50	>39.40
					>10	0	77	0	>39.40	4.50	>39.40
6-V-33	5349II	204029	32.80	58	1	23	23	58	6.90	6.90	4.30
					2	28	51	35	6.20	4.60	5.50
					3	5	56	7	14.70	4.40	12.40
					4	1	57	2	32.80	4.40	23.20
					5	1	58	1	32.80	4.30	32.80
					6	0	58	0	>32.80	4.30	>32.80
					7	0	58	0	>32.80	4.30	>32.80
					8	0	58	0	>32.80	4.30	>32.80
					9	0	58	0	>32.80	4.30	>32.80
					10	0	58	0	>32.80	4.30	>32.80
					>10	0	58	0	>32.80	4.30	>32.80
6-V-34	5348I	150019	19.60	27	1	4	4	27	9.80	9.80	3.80
					2	19	23	23	4.50	4.10	4.10
					3	2	25	4	13.90	3.90	9.80
					4	2	27	2	13.90	3.80	13.90
					5	0	27	0	>19.60	3.80	>19.60
					6	0	27	0	>19.60	3.80	>19.60
					7	0	27	0	>19.60	3.80	>19.60
					8	0	27	0	>19.60	3.80	>19.60
					9	0	27	0	>19.60	3.80	>19.60
					10	0	27	0	>19.60	3.80	>19.60
					>10	0	27	0	>19.60	3.80	>19.60
6-V-35	5349II	154046	26.20	35	1	5	5	35	11.70	11.70	4.40
					2	22	27	30	5.60	5.10	4.80
					3	4	31	8	13.10	4.70	9.30
					4	2	33	4	18.50	4.60	13.10
					5	1	34	2	26.20	4.50	18.50
					6	1	35	1	26.20	4.40	26.20
					7	0	35	0	>26.20	4.40	>26.20
					8	0	35	0	>26.20	4.40	>26.20
					9	0	35	0	>26.20	4.40	>26.20
					10	0	35	0	>26.20	4.40	>26.20
					>10	0	35	0	>26.20	4.40	>26.20

(Continued)

Table A12 (Continued)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems >1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft, for Diams ≤ Stated ESD	Stem Spacing, ft, for Diams ≥ Stated ESD
6-V-36	5349II	153032	4.90	31	1	23	23	31	3.40	3.40	2.90
					2	8	31	8	5.80	2.90	5.80
					3	0	31	0	>4.90	2.90	>4.90
					4	0	31	0	>4.90	2.90	>4.90
					5	0	31	0	>4.90	2.90	>4.90
					6	0	31	0	>4.90	2.90	>4.90
					7	0	31	0	>4.90	2.90	>4.90
					8	0	31	0	>4.90	2.90	>4.90
					9	0	31	0	>4.90	2.90	>4.90
					10	0	31	0	>4.90	2.90	>4.90
					>10	0	31	0	>4.90	2.90	>4.90
6-V-37	5349II	123025	78.80	59	1	31	31	59	14.20	14.20	10.30
					2	3	34	28	45.50	13.50	14.90
					3	0	34	25	>78.80	13.50	15.80
					4	0	34	25	>78.80	13.50	15.80
					5	0	34	25	>78.80	13.50	15.80
					6	1	35	25	78.80	13.30	15.80
					7	0	35	24	>78.80	13.50	16.10
					8	4	39	24	39.40	12.60	16.10
					9	4	43	20	39.40	12.00	17.60
					10	5	48	16	35.20	11.40	19.70
					>10	11	59	11	23.80	10.30	23.80
6-V-38	5449III	850024	65.60	19	1	2	2	19	46.40	46.40	15.00
					2	17	19	17	15.90	15.00	15.90
					3	0	19	0	>65.60	15.00	>65.60
					4	0	19	0	>65.60	15.00	>65.60
					5	0	19	0	>65.60	15.00	>65.60
					6	0	19	0	>65.60	15.00	>65.60
					7	0	19	0	>65.60	15.00	>65.60
					8	0	19	0	>65.60	15.00	>65.60
					9	0	19	0	>65.60	15.00	>65.60
					10	0	19	0	>65.60	15.00	>65.60
					>10	0	19	0	>65.60	15.00	>65.60
6-V-39	5449III	839059	98.40	75	1	4	4	75	49.20	49.20	11.30
					2	25	29	71	19.70	18.30	11.70
					3	7	36	46	37.20	16.40	14.50
					4	4	40	39	49.20	15.50	15.80
					5	0	40	35	>98.40	15.50	16.60
					6	12	52	35	28.40	13.60	16.60
					7	19	71	23	22.60	11.70	20.50
					8	1	72	4	98.40	11.60	49.20
					9	1	73	3	98.40	11.50	56.80
					10	0	73	2	>98.40	11.50	69.50
					>10	2	75	2	69.50	11.30	69.50
6-V-40	5449III	833102	131.20	1,214	1	1,028	1,028	1,214	4.10	4.10	3.80
					2	114	1,142	186	1.20	3.90	9.60
					3	34	1,176	72	22.50	3.80	15.50
					4	4	1,180	38	65.60	3.80	21.30
					5	4	1,184	34	65.60	3.80	22.50
					6	12	1,196	30	37.90	3.80	24.00
					7	4	1,200	18	65.60	3.80	31.00
					8	3	1,203	14	75.80	3.80	35.10
					9	2	1,205	11	92.80	3.80	39.60
					10	3	1,208	9	75.80	3.80	43.80
					>10	6	1,214	6	53.50	3.80	53.50
6-V-41	5449III	837089	164.00	18	1	0	0	18	>164.00	>164.00	38.70
					2	0	0	18	>164.00	>164.00	38.70
					3	0	0	18	>164.00	>164.00	38.70
					4	0	0	18	>164.00	>164.00	38.70
					5	1	1	18	164.00	164.00	38.70
					6	9	10	17	54.70	52.00	39.80
					7	5	15	8	73.30	42.40	58.00
					8	2	17	3	116.00	39.80	94.80
					9	0	0	1	>164.00	>164.00	164.00
					10	0	0	1	>164.00	>164.00	164.00
					>10	1	18	1	164.00	38.70	164.00
6-V-42	5449III	815055	4.90	55	1	55	55	55	0.66	0.66	0.66
					2	0	55	0	>4.90	0.66	>4.90
					3	0	55	0	>4.90	0.66	>4.90
					4	0	55	0	>4.90	0.66	>4.90
					5	0	55	0	>4.90	0.66	>4.90
					6	0	55	0	>4.90	0.66	>4.90
					7	0	55	0	>4.90	0.66	>4.90
					8	0	55	0	>4.90	0.66	>4.90
					9	0	55	0	>4.90	0.66	>4.90
					10	0	55	0	>4.90	0.66	>4.90
					>10	0	55	0	>4.90	0.66	>4.90

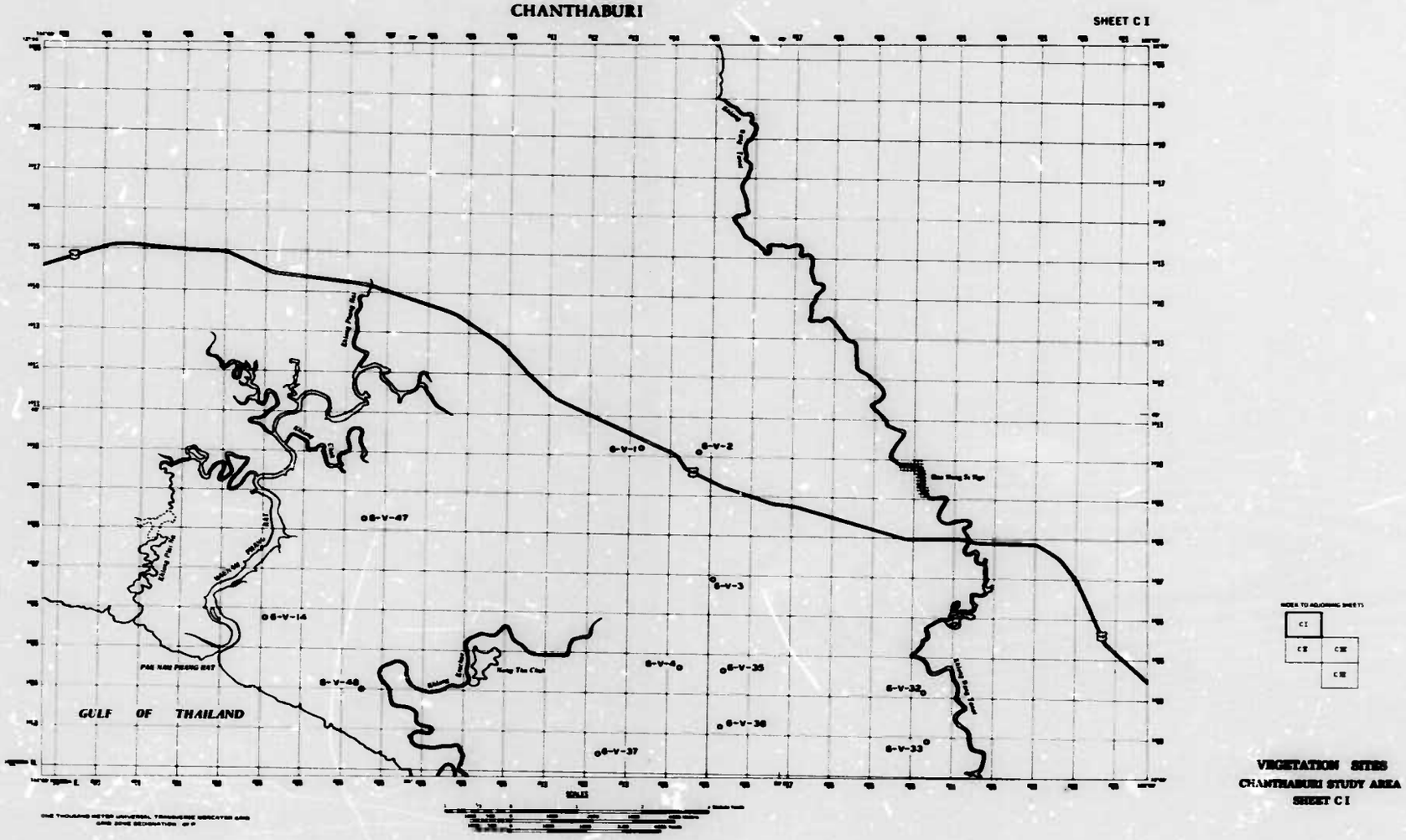
(Continued)

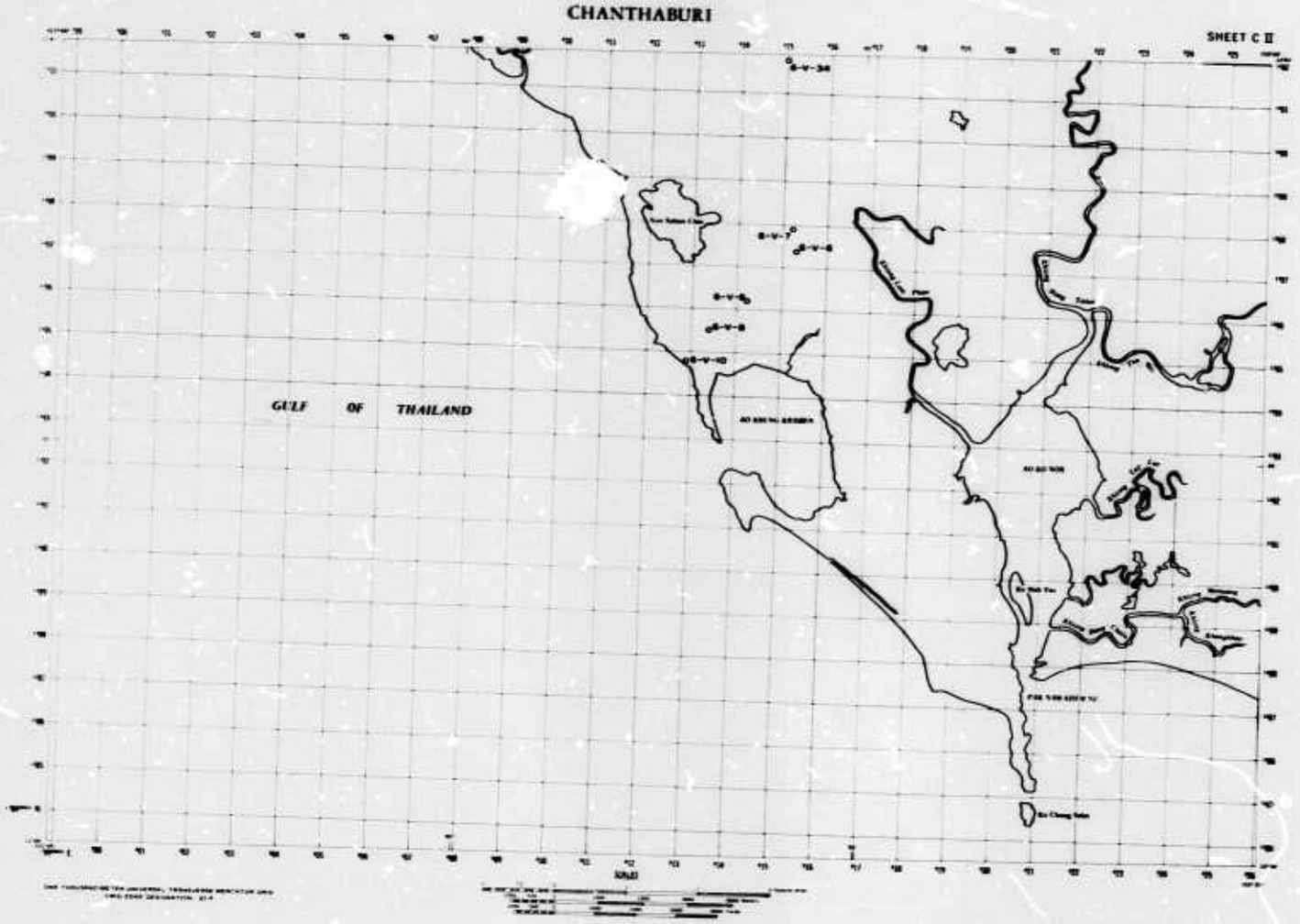
Table A12 (Concluded)

Site No.	AMS Map Sheet	Grid Coordinates	Cell Diameter ft	Total Stems >1 in.	Effective Stem Diameter (ESD), in.	Stem Count	Cumulative Stem Count for Diams ≤ Stated ESD	Cumulative Stem Count for Diams ≥ Stated ESD	Stem Spacing ft	Stem Spacing, ft for Diams ≤ Stated ESD	Stem Spacing, ft for Diams ≥ Stated ESD
6-V-43	5449III	841040	32.80	63	1	25	25	63	6.60	6.60	4.10
					2	23	48	38	6.80	4.70	5.30
					3	10	58	15	10.40	4.30	8.50
					4	3	61	5	18.90	4.20	14.70
					5	2	63	2	23.20	4.10	23.20
					6	0	63	0	>32.80	4.10	>32.80
					7	0	63	0	>32.80	4.10	>32.80
					8	0	63	0	>32.80	4.10	>32.80
					9	0	63	0	>32.80	4.10	>32.80
					10	0	63	0	>32.80	4.10	>32.80
					>10	0	63	0	>32.80	4.10	>32.80
6-V-44	5449III	806021	26.20	20	1	18	18	20	6.20	6.20	5.90
					2	2	20	2	18.60	5.90	18.60
					3	0	20	0	>26.20	5.90	>26.20
					4	0	20	0	>26.20	5.90	>26.20
					5	0	20	0	>26.20	5.90	>26.20
					6	0	20	0	>26.20	5.90	>26.20
					7	0	20	0	>26.20	5.90	>26.20
					8	0	20	0	>26.20	5.90	>26.20
					9	0	20	0	>26.20	5.90	>26.20
					10	0	20	0	>26.20	5.90	>26.20
					>10	0	20	0	>26.20	5.90	>26.20
6-V-45	5448IV	956972	32.80	47	1	23	23	47	6.80	6.80	4.80
					2	18	41	24	7.70	5.10	6.70
					3	4	45	6	16.40	4.90	13.40
					4	1	46	2	32.80	4.80	23.20
					5	0	46	2	>32.80	4.80	32.80
					6	0	46	2	>32.80	4.80	32.80
					7	1	47	1	32.80	4.80	32.80
					8	0	47	1	>32.80	4.80	32.80
					9	0	47	1	>32.80	4.80	32.80
					10	0	47	1	>32.80	4.80	32.80
					>10	0	47	1	>32.80	4.80	32.80
6-V-46	5448IV	938968	78.80	448	1	221	221	448	5.30	5.30	3.70
					2	159	380	227	6.20	4.10	5.20
					3	36	416	68	13.10	3.90	9.60
					4	22	438	32	16.80	3.80	13.90
					5	4	442	10	32.40	3.70	24.80
					6	1	443	6	78.80	3.70	32.20
					7	0	443	5	>78.80	3.70	35.20
					8	2	445	5	55.70	3.70	35.20
					9	0	443	3	>78.80	3.70	45.50
					10	1	446	3	78.80	3.70	45.50
					>10	2	448	2	55.60	3.70	55.60
6-V-47	5349II	065083	65.60	32	1	0	0	32	>65.60	>65.60	11.60
					2	3	3	32	38.00	38.00	11.60
					3	0	3	29	>65.60	38.00	12.20
					4	6	9	29	26.80	21.90	12.20
					5	3	12	23	38.00	18.90	13.70
					6	9	21	20	21.90	14.30	14.70
					7	4	25	11	32.80	13.10	19.80
					8	0	25	7	>65.60	13.10	24.80
					9	3	28	7	38.00	12.40	24.80
					10	2	30	4	46.40	12.00	32.80
					>10	2	32	2	46.40	11.60	46.40
6-V-48	5349II	065040	131.20	24	1	0	0	24	>131.20	>131.20	40.20
					2	0	0	24	>131.20	>131.20	40.20
					3	0	0	24	>131.20	>131.20	40.20
					4	0	0	24	>131.20	>131.20	40.20
					5	0	0	24	>131.20	>131.20	40.20
					6	9	9	24	43.70	43.70	40.20
					7	4	13	15	65.60	54.50	51.00
					8	3	16	11	75.60	49.20	59.50
					9	1	17	8	131.20	47.70	69.50
					10	1	18	7	131.20	46.50	79.40
					>10	6	24	6	80.30	40.20	80.30

(6 of 6 sheets)

FIG. A22


CHANTHABURI
SHEET C I
GULF OF THAILAND
6-V-10
6-V-2
6-V-47
6-V-3
6-V-14
6-V-4
6-V-35
6-V-46
6-V-32
6-V-36
6-V-37
6-V-33
SCALE
VEGETATION SITES
CHANTHABURI STUDY AREA
SHEET C I

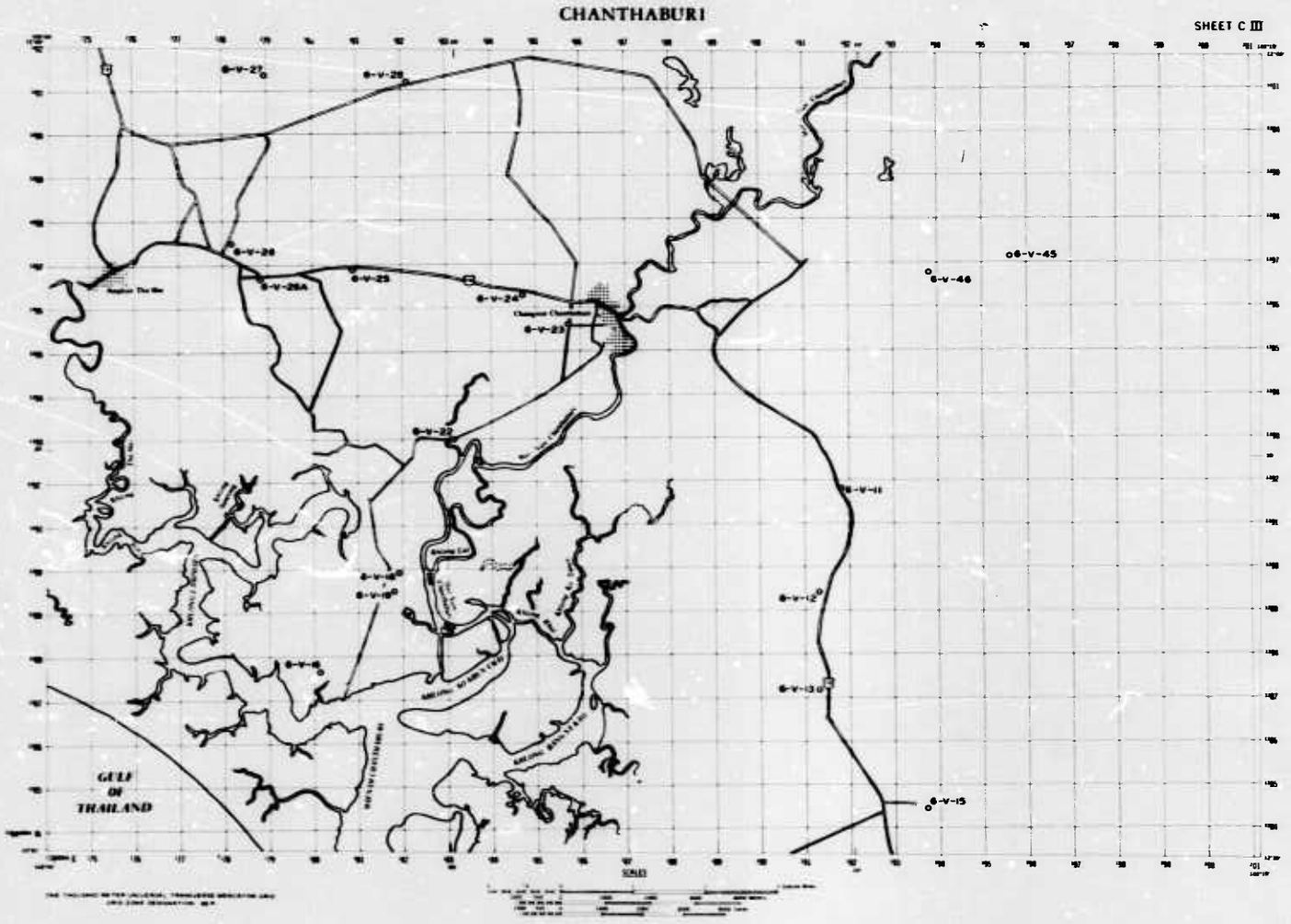


VEGETATION SITES
CHANTHABURI STUDY AREA
SHEET C II

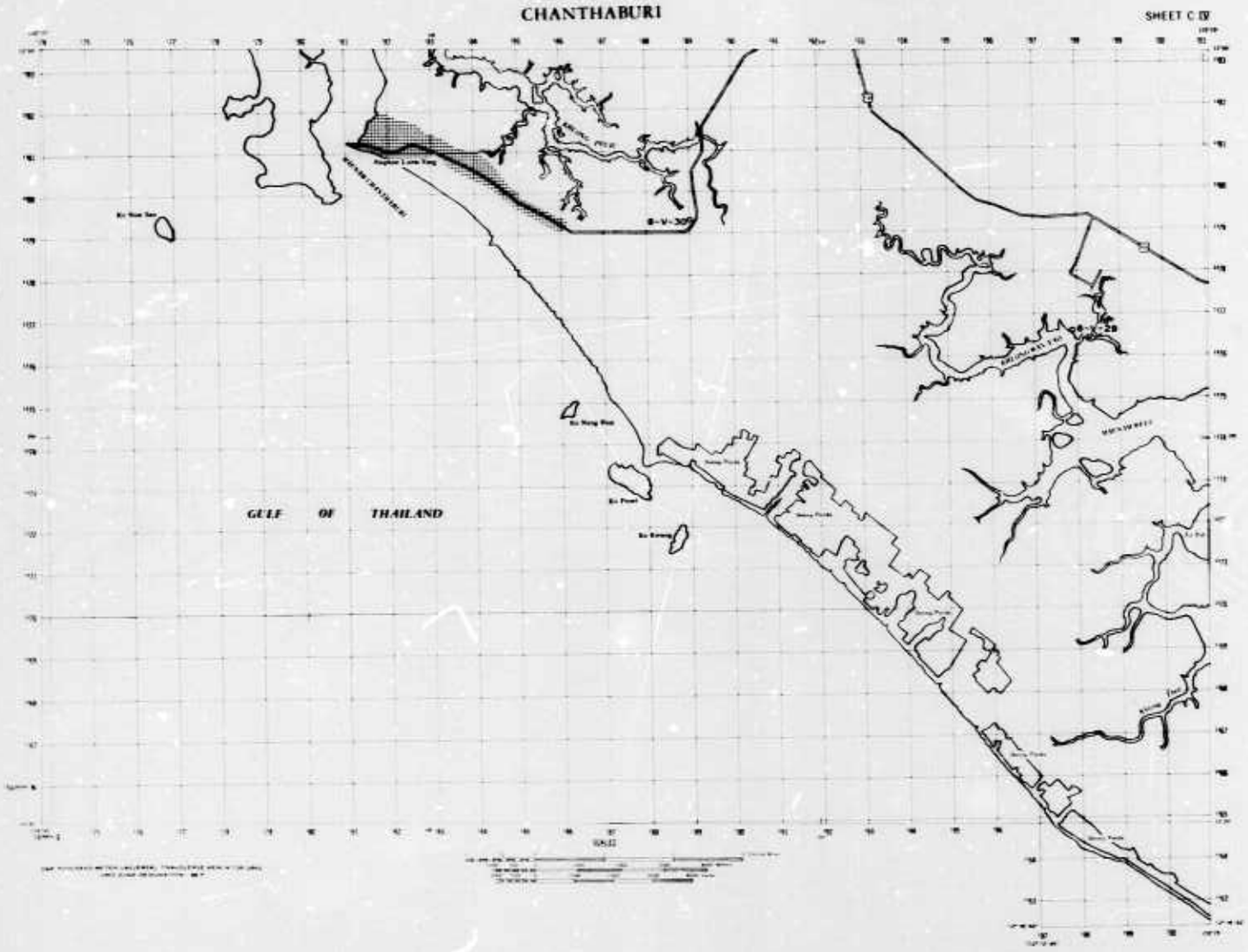
FIG. A23

FIG. A24

A88



VEGETATION SITES
CHANTHABURI STUDY AREA
SHEET C III



VEGETATION SITES
CHANTHABURI STUDY AREA
SHEET C IV

FIG. A25

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13. ABSTRACT

Vegetation characteristics were measured according to established sampling procedures at 295 sites within six areas of Thailand. From these samples, stem diameter and spacing data were extracted for analysis, since these are the factors that significantly affect performance of ground-contact vehicles. A dual classification system was devised for mapping these factors in which spacing values of 0-1.5 m, >1.5-3.0 m, >3.0-9.0 m, and >9.0 m were determined for stem diameters of 5 cm or less, 13 cm or less, 23 cm or less, and 130 cm or less, and stem diameters of 3 cm or more, 8 cm or more, 15 cm or more, and 25 cm or more. Map units were identified and delimited on aerial photographs by established photo-interpretation keys and techniques. Twenty-five 1:50,000-scale map sheets were prepared for the six study areas, on which 72 distinct mapping classes were identified. The vegetation field data for the six study areas are summarized in Appendix A.

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